

## USING NATALITY DATA IN HEALTH PLANNING

Jean E. Foster<sup>a</sup>

### INTRODUCTION

The uses of infant mortality data in planning maternal and infant health programs at the local level were discussed in a previous Note.<sup>1</sup> The purpose of this Note is to describe how information on the birth certificate can be used to supplement infant mortality data, particularly in terms of maternal risk factors.

As discussed in Statistical Note No. 2, the stability of the infant mortality rate depends on the number of births and deaths on which the rate is based. If there are few births, the observed infant mortality rate may be very different from the true underlying mortality rate due to chance variations. Characteristics of the birth distribution, however, can be estimated with little error based on a relatively small number of births. Therefore, using natality data to assess risk of infant mortality is particularly useful for health planning at the local level.

Also, the identification of variables associated with greater risk of infant death generally points to appropriate health intervention strategies. The effectiveness of intervention programs can then be evaluated by monitoring changes over time in these natality indicators as well as in mortality.

<sup>a</sup>Division of Analysis, National Center for Health Statistics.

The methodology and data presented in this Note are compatible with the infant mortality algorithm published by the Rand Corporation in 1977.<sup>2</sup> Health planners are encouraged to consult this document for a more detailed approach to problem solutions and evaluation.

### INFORMATION AVAILABLE ON THE BIRTH CERTIFICATE

Previous research, based largely on studies of linked birth and death records, has identified various maternal and infant characteristics associated with increased risk of infant death.<sup>3,4</sup> The items on the birth certificate (or derived from other items on the birth certificate) that represent potential maternal risk factors include race, age, birth order, birth interval, marital status, education, prenatal care, and outcome of previous pregnancy.

However, not all State birth certificates contain the full array of data items; table A shows the States reporting selected items on the birth certificate in 1977. Similar tables can be found in the Technical Appendix of *Vital Statistics of the United States*, Volume I for other data years. 1977 nonresponse levels for the items discussed below are provided in table B.

- *Race.*—Black infants continue to experience much higher mortality rates than white infants.<sup>5</sup> In 1977 the black infant mortality rate of 23.6 was nearly twice as high as the white rate of 12.3. Infant race is classified according to rules based on race of parents;<sup>b</sup> only a very small percentage of births (0.2 percent in 1977) had race imputed because the race of both parents was unknown. Since the race of the mother and child is nearly always the same, “race” in this report is used as a maternal characteristic although the data relate specifically to the race of the infant.
- *Age.*—Births to women at either extreme of the age distribution, i.e., under 20 years and 35 years and over, are at greater risk of infant death.<sup>4</sup> Age of mother is imputed when this item is not stated or has an invalid entry. (These situations occur very rarely.)
- *Birth order.*—Birth order and parity are ascertained from the pregnancy history items on the birth certificate. Live-birth order indicates the number of children born alive to the mother, including the present child. Parity refers to the number of children previously born alive to a woman. Unlike the two measures just described, total-birth order includes fetal deaths; this term refers to the total number of live births (including the present live birth) and fetal deaths born to the mother. Infant mortality generally rises with higher order births; the relationship, however, varies with age of mother.<sup>4</sup> Greater risks are associated with first births to older mothers

<sup>b</sup> For a discussion of the classification rules, see: National Center for Health Statistics, *Vital Statistics of the United States, 1975*, Vol. I, DHEW Pub. No. (PHS) 78-1113, Public Health Service, Washington, U.S. Government Printing Office, 1978, pp. 4-7 and 4-8.

and high-order births to both very young and older mothers.

- *Interval since last birth.*—The date of the last live birth or fetal death can be used in conjunction with date of present birth to determine the interval since the last birth. A short time period between pregnancies (i.e., less than 18 months between consecutive deliveries) is associated with increased infant mortality.<sup>2</sup>
- *Marital status.*—An item on whether the mother was married at any time from conception through birth determines the legitimacy status of the birth. In States reporting mother’s marital status, the proportion of births for which this item is not stated is very small. Therefore, such births are considered legitimate. Higher infant mortality rates are generally found among births to unmarried mothers.<sup>4</sup>
- *Educational attainment of mother.*—This information serves as a measure of socioeconomic status. Infants born to women with lower educational attainment are subject to greater risk of mortality than infants born to women with higher levels of educational attainment.<sup>6</sup>
- *Prenatal care.*—Information on the month of the pregnancy that prenatal care began is collected, as well as data on the number of prenatal visits. The timing—and to a lesser extent, the frequency—of prenatal care is associated with infant mortality.<sup>2,7</sup>
- *Outcome of previous pregnancy.*—Valid dates of both last live birth and last fetal death are needed to determine the outcome of previous pregnancy for second and higher order births. Infant mortality rates are considerably higher among births to mothers with a previous fetal or infant death than among births to other mothers.<sup>8</sup>

Table A. States reporting educational attainment of mother, dates of last live birth and fetal death, date last normal menstrual period began, month of pregnancy prenatal care began, number of prenatal visits, and legitimacy status: Each State, 1977

State	Educational attainment of mother	Dates of last live birth and fetal death	Date last normal menstrual period began	Month of pregnancy prenatal care began	Number of prenatal visits	Legitimacy status
Number of States reporting item .....	45	44	43	45	42	38
Alabama.....	X	X	X	X	X	X
Alaska.....	X	X	X			X
Arizona.....	X	X	X	X	X	X
Arkansas.....						X
California.....		X	X	X		
Colorado.....	X	X	X	X	X	X
Connecticut.....	X	X		X	X	
Delaware.....	X	X	X	X	X	X
District of Columbia.....	X	X	X	X	X	X
Florida.....	X	X	X	X	X	X
Georgia.....	X	X	X	X	X	
Hawaii.....	X	X	X	X	X	X
Idaho.....						
Illinois.....	X	X	X	X	X	X
Indiana.....	X	X	X	X	X	X
Iowa.....	X	X	X	X	X	X
Kansas.....	X	X	X	X	X	X
Kentucky.....	X	X	X	X	X	X
Louisiana.....	X		X	X	X	X
Maine.....	X	X	X	X	X	X
Maryland.....	X	X	X	X		
Massachusetts.....	X	X	X	X	X	
Michigan.....	X	X	X	X	X	X
Minnesota.....	X	X	X	X	X	X
Mississippi.....	X	X	X	X	X	X
Missouri.....	X	X	X	X	X	X
Montana.....	X	X	X	X	X	
Nebraska.....	X	X	X	X	X	X

**Table A. States reporting educational attainment of mother, dates of last live birth and fetal death, date last normal menstrual period began, month of pregnancy prenatal care began, number of prenatal visits, and legitimacy status: Each State, 1977—Con.**

State	Educational attainment of mother	Dates of last live birth and fetal death	Date last normal menstrual period began	Month of pregnancy prenatal care began	Number of prenatal visits	Legitimacy status
Nevada.....	X	X	X	X	X	
New Hampshire.....	X	X	X	X	X	X
New Jersey.....	X	X	X	X	X	X
New Mexico.....						
New York.....	X	X	X	X	X	
North Carolina.....	X	X	X	X	X	X
North Dakota.....	X	X	X	X	X	X
Ohio.....	X	X	X	X		
Oklahoma.....	X	X	X	X	X	X
Oregon.....	X	X	X	X	X	X
Pennsylvania.....	X					X
Rhode Island.....	X	X	X	X	X	X
South Carolina.....	X	X	X	X	X	X
South Dakota.....	X	X	X	X	X	X
Tennessee.....	X	X	X	X	X	X
Texas.....				X		
Utah.....	X	X	X	X	X	X
Vermont.....	X	X	X	X	X	
Virginia.....	X				X	X
Washington.....		X	X	X	X	X
West Virginia.....	X	X	X	X	X	X
Wisconsin.....	X	X		X	X	X
Wyoming.....	X	X	X	X	X	X

Table B. Percent unknown<sup>1</sup> for selected items on birth certificates in reporting States: 1977

Item	Percent unknown
Race .....	0.20
Age .....	0.03
Total-birth order <sup>2</sup> .....	1.05
Live-birth order <sup>2</sup> .....	1.01
Interval since last live birth <sup>2</sup> .....	5.11
Marital status.....	0.57
Educational attainment of mother.....	1.99
Month of pregnancy prenatal care began .....	3.65
Number of prenatal visits.....	5.07
Outcome of previous pregnancy <sup>2</sup> .....	5.66
Birth weight.....	0.19
Gestational age <sup>2</sup> .....	20.60

<sup>1</sup>Includes invalid entries.

<sup>2</sup>Derived from other items on birth certificate.

On an individual basis, many of these maternal characteristics tend to occur together. For example, very young mothers generally have low educational attainment and are likely to receive inadequate prenatal care. However, some localities may be high on one of these typically correlated variables but low on another. For example, the extent to which young maternal age, low education, and late prenatal care are found in areas may depend on differences in the availability of health services. Thus, initial attention should focus on the possible variation in individual measures of risk, but in more detailed analysis, some variables should be considered jointly. In this Note, age of mother and total-birth order are combined into one measure as an example of a joint variable.

The birth certificate also contains information about the infant which can be used to assess the outcome of the pregnancy: birth weight and length of gestation. Both these variables are indicators of prematurity, a major health problem in the United States.<sup>9</sup>

- *Birth weight.*—Birth weight is the factor most strongly associated with the risk of infant death. Infant mortality increases sharply with decreasing birth weight below about 3,000 grams. Low birth weight is also associated with significant illness among survivors.<sup>10</sup>

The low-birth-weight ratio (proportion of live births weighing 2,500 grams or less) is often used as an indicator of poor pregnancy outcome. Recently, the proportion of infants with very low birth weight (1,500 grams or less) has also been used as an indicator.<sup>11</sup> Birth weight will be discussed more fully in a subsequent Note.

- *Gestational age.*—Length of gestation is derived from the item on the first day of the mother's last menstrual period. Gestational age is highly correlated with birth weight, and its effect on infant mortality is very similar. Within a given birth-weight group, however, infants with shorter gestations have greater mortality.<sup>3</sup> The relatively high level of nonresponse on this item (20.6 percent in 1977) and the questionable accuracy of reported date of last menstrual period make this item less useful for routine application to health planning. The use of birth weight alone is less complicated and probably results in little loss of information.

With regard to the quality of birth certificate reporting, a recent analysis of the comparability between information from the birth certificate and information collected in the National Natality Survey confirms that the reporting of most of these items is good.<sup>12</sup> The lower levels of agreement found for items such as education of mother and month prenatal care began were considerably reduced by using the data in grouped form.

When birth certificates and infant death records are linked, the analytic potential of the data is greatly increased. Although 1960 is the last year for which linked birth and death records are available nationally, this type of data is available for a few States and local areas. However, many more vital registration areas match birth and death records, often as a manual check for registration completeness, but do not produce these records in computerized form for statistical purposes. Local

health planners may want to work with their local health department to encourage the creation of linked files for analysis. Examples of the greater analytic potential of linked files can be found in references 3, 4, and 7.

### RISK FACTORS BASED ON NATALITY DATA

The rest of this Note shows selected measures of risk, based on 1977 natality data, by health service area (HSA). These data are presented to illustrate the potential for using natality data and are not meant to provide the framework for a complete analysis. The measures used provide a baseline for comparing HSA's and monitoring changes that occur over time. There will be a discussion of the specific measures selected and how they were defined, their geographic distribution, and examples of how they can be utilized for health planning.

The computer printout at the end of this report contains seven risk factors derived from natality data. Due to the large differences between white and black infant mortality, race-specific measures are presented in the printout (1 = total, 2 = white, 3 = black, 4 = other). To minimize unstable estimates, only HSA's with at least 500 births for a specified race group were included in the analysis. Tests of significance and the calculation of confidence intervals for the estimates are discussed later.

In addition, any distribution or comparison of measures in this report is based only on HSA's designated in States where the item was included on the birth certificate. Thus a measure such as the proportion of births to women with late prenatal care relates only to births to residents of a reporting State that also occurred in a reporting State; births to residents of a reporting State that occurred in a nonreporting State are not considered. The record was also excluded from the calculation of a risk measure if reporting of an item was required but the response was not stated for some other reason. Thus the denominator for the proportion of late-prenatal-care births represents the total number of births in the

reporting areas minus those cases for which the item on month prenatal care began was not stated or not available.

Several age-related measures of maternal risk are presented, including the proportion of births to women under 18 years of age, under 20 years of age, and 35 years of age and over. The interaction of age of mother and total-birth order is summarized in a fourth measure labeled "high risk." This risk measure is the proportion of births with any of the following characteristics: (1) all births to women under 20 or 35 and over, (2) total-birth order three or more to women 20-24 years, (3) total-birth order four or more to women 25-29 years, and (4) total-birth orders one and four or more to women 30-34 years old. These combinations were chosen since they identify infants at highest risk of death.<sup>4</sup>

Other maternal risk measures included are the proportion of births to unmarried women, the proportion of births to women with low educational attainment (not high school graduates), and the proportion of births to women receiving late prenatal care (care received after the first trimester of pregnancy or no care at all).

### DISTRIBUTION OF MEASURES AMONG HEALTH SERVICE AREAS

Table C summarizes the variation among HSA's in these measures associated with risk of infant death. The total number of births, which exhibits considerably more variability than any of the risk factors, is also included.

Except for the proportion of births to women 35 years of age and older, the levels of the risk measures are much higher among black than among white births. The differential is most extreme for the proportion of births to unmarried women, where for the median value there is a difference of 44 percentage points between the races.

The variability among HSA's is greater within the group of white births than within the black group for most measures. In the HSA distributions for white births, the ratio of the highest to lowest decile exceeds 2.0 for over half of the risk measures (percent under

Table C. Distribution of maternal risk measures by race: U.S. health service areas (HSA's), 1977<sup>1</sup>

Maternal risk measure	White			Black		
	Median	Ratio <sup>2</sup>	Coefficient of variation <sup>3</sup>	Median	Ratio <sup>2</sup>	Coefficient of variation <sup>3</sup>
Number of births .....	9,407.5	4.70	83.8	2,252.0	13.39	135.7
Percent under 18 years.....	5.3	2.37	31.5	14.6	1.89	22.8
Percent under 20 years.....	15.4	1.88	24.5	30.4	1.45	15.6
Percent 35 years and over .....	3.9	1.81	26.8	3.7	1.85	26.3
Percent high risk .....	35.9	1.39	11.5	57.6	1.45	12.5
Percent low education <sup>4</sup> .....	21.4	2.51	32.5	39.8	1.59	17.8
Percent unmarried <sup>4</sup> .....	7.6	2.07	28.2	51.9	1.40	15.2
Percent late prenatal care <sup>4</sup> .....	21.8	2.26	29.0	39.5	1.79	23.3

<sup>1</sup>Based only on HSA's with at least 500 births in the specified race group in 1977.

<sup>2</sup>Ratio of highest decile HSA to lowest decile HSA.

<sup>3</sup>Standard deviation of the distribution divided by the mean, multiplied by 100.

<sup>4</sup>Based only on HSA's designated in States that include item on birth certificate.

18 years, percent low education, percent unmarried, and percent late prenatal care), whereas for black births, these ratios range from 1.40 to 1.89. The proportion of births to women under 18 exhibits considerable variability for both races, with a high-to-low ratio of 2.37 for white births and 1.89 for black births.

Table D provides the percentile distribution of risk measures among HSA's. A percentile value is the value for a risk measure below which a given proportion of HSA's will be included. For example, the 90th percentile value for the percent of white births to women under 20 years of age is 19.7 percent; this indicates that 90 percent of the HSA's have fewer than 19.7 percent of their white births to women under 20 years of age.

### Relationship Among the Risk Measures

In order to show the degree of association between white and black measures, table E shows the Pearson product-moment correlation coefficients between maternal risk measures for white and black births. The moderate correlations indicate that HSA's with high proportions for whites do not necessarily have high proportions for blacks. The correlations are lowest for the proportion of high-risk births and the proportion of births to unmar-

ried mothers (.40 and .39, respectively) and highest for the prenatal care variable (.59).

In order to show the degree of association among the risk measures, table F shows the correlation coefficients among the various risk measures for white and black births separately. The very strong relationship between the proportion of births to women under 18 years and the proportion of births to women under 20 years is due to the fact that one measure is a subset of the other. However, from the point of view of identifying high-risk areas, the near perfect correlation shows that the measures are interchangeable.

Perhaps more noteworthy is the relationship between the proportion of high-risk births and the proportion of births to mothers under 20 (all of whom were included as high risk). Among white births, the correlation is not as high as might have been expected. This suggests that there is variation among HSA's in terms of which age-birth order groups contribute most to high-risk births.

Table F also points to the individual contribution of some factors. Apart from the higher correlations between young age and education, few of the remaining correlations exceed .5 for both races. This suggests that focusing solely on one of the risk indicators could overlook HSA's where there are other problems.

Table D. Percentile distributions of maternal risk measures by race: U.S. health service areas (HSA's), 1977

Race and percentile	Percent under 18 years	Percent under 20 years	Percent 35 years and over	Percent high risk	Percent low education	Percent unmarried	Percent late prenatal care
<b>White</b>							
5 .....	2.9	8.4	3.0	28.6	11.9	4.4	12.3
10 .....	3.3	10.6	3.1	29.8	13.1	5.0	13.7
20 .....	3.9	11.9	3.4	32.6	16.2	6.1	17.2
30 .....	4.4	13.0	3.5	33.8	18.8	6.7	19.4
40 .....	4.8	14.2	3.7	34.8	20.3	7.1	20.5
50 .....	5.3	15.2	3.9	35.8	21.4	7.5	21.9
60 .....	5.8	16.4	4.1	36.8	24.0	8.1	23.4
70 .....	6.2	17.0	4.4	37.8	26.6	8.8	24.7
80 .....	7.0	18.2	4.6	39.0	28.0	9.7	26.3
90 .....	7.8	19.7	5.6	41.2	31.9	10.3	29.8
95 .....	8.2	20.8	6.8	42.1	36.4	11.4	33.4
Number of HSA's.....	202	202	202	202	166	135	182
<b>Black</b>							
5 .....	9.2	21.5	2.3	41.9	27.5	41.1	23.3
10 .....	9.8	24.3	2.8	44.5	30.8	43.1	27.7
20 .....	11.9	27.2	3.1	52.5	34.2	46.2	29.6
30 .....	13.1	28.4	3.3	54.6	36.5	47.7	32.8
40 .....	13.7	29.2	3.5	56.2	38.3	51.0	36.8
50 .....	14.5	30.4	3.7	57.6	39.7	51.9	39.5
60 .....	15.6	31.3	3.9	58.6	41.9	53.8	40.9
70 .....	16.1	32.7	4.2	60.2	43.8	55.3	44.4
80 .....	17.2	33.6	4.5	61.2	45.7	57.7	46.1
90 .....	18.3	35.0	5.1	64.4	48.4	60.4	49.6
95 .....	19.8	37.4	5.8	65.9	50.6	62.5	53.3
Number of HSA's.....	143	143	143	143	115	91	130

Table E. Correlations between maternal risk measures of white and black births: U.S. health service areas (HSA's), 1977

Maternal risk measure	Correlation coefficient <sup>1</sup>	Number of HSA's
Percent high risk.....	.40	143
Percent under 20 years.....	.55	143
Percent low education.....	.54	115
Percent unmarried.....	.39	91
Percent late prenatal care.....	.59	130

<sup>1</sup>Pearson product-moment correlation coefficient (r).

Comparing the races, a greater influence of young maternal age and education on the proportion of high-risk births is evident for blacks. Among black births, the proportion unmarried is more strongly correlated with other risk measures, such as the proportion under 20 years and the proportion high-risk

births, than among white births, where the comparable coefficients show virtually no relationship.

### Confidence Intervals

Since the number of births in an HSA may be relatively small, confidence intervals for risk measures should be calculated. Most States provide the National Center for Health Statistics with 100 percent of their birth certificates, while statistics for the remaining States (Arizona, Arkansas, California, Connecticut, Delaware, District of Columbia, Georgia, Hawaii, Indiana, Mississippi, New Jersey, New Mexico, North Dakota, Pennsylvania, South Dakota, Utah, Washington, and Wyoming) are based on a 50-percent sample of birth certificates. The formula for calculating the approximate standard error of a risk



Table F. Correlations<sup>1</sup> among maternal risk measures by race: U.S. health service areas (HSA's), 1977

Maternal risk measure <sup>2</sup>	Percent under 20 years	Percent 35 years and over	Percent high risk	Percent low education	Percent unmarried	Percent late prenatal care
<u>White</u>						
Percent under 18 years.....	.966	-.458	.668	.830	-.148	.419
Percent under 20 years.....		-.555	.686	.769	-.152	.436
Percent 35 years and over.....			-.082	-.238	-.253	.044
Percent high risk.....				.458	.120	.632
Percent low education.....					-.013	.352
Percent unmarried.....						.240
<u>Black</u>						
Percent under 18 years.....	.954	-.076	.800	.729	.500	.542
Percent under 20 years.....		-.141	.835	.673	.510	.506
Percent 35 years and over.....			.164	.010	.020	.220
Percent high risk.....				.725	.427	.554
Percent low education.....					.265	.435
Percent unmarried.....						.117

<sup>1</sup>Pearson product-moment correlation coefficient (r).

<sup>2</sup>Only HSA's with both measures available from the birth certificate were included in the calculation of any correlation coefficient.

measure (or proportion) will vary depending on the source of data:

$$SE(p) = \sqrt{\frac{pq}{n}} \quad \text{in States with no sampling}$$

$$SE(p) = \sqrt{\frac{pq}{n/2}} = \sqrt{\frac{2pq}{n}} \quad \text{in States with 50-percent sampling}^c$$

where

$p$  = proportion (risk measure)

$q$  =  $1 - p$

$n$  = number of births

<sup>c</sup>This formula ignores the small contribution to the variance resulting from the sampling error associated with the 50-percent sample. The model assumed here is that the observed risk measure in any one year is an estimate of the underlying true measure. See reference 1 for a more detailed discussion of this issue in the context of the infant mortality rate.

The following examples show the standard errors for the percent of births to women under 20 years of age for two HSA's.

ALA 01 (Alabama, no sampling)

$$SE(\% \text{ teenage, white births}) = \sqrt{\frac{(.199)(.801)}{9407}} = .004$$

IND 03 (Indiana, sampling)

$$SE(\% \text{ teenage, black births}) = \sqrt{\frac{2(.288)(.712)}{647}} = .025$$

The 95-percent confidence intervals are:

$$\text{Upper limit: } p + 1.96 \times SE(p)$$

$$\text{Lower limit: } p - 1.96 \times SE(p)$$

Returning to our examples, the confidence limits for white teenage births in ALA 01 are:

$$\text{Upper limit: } .199 + (1.96 \times .004) = .207 \text{ (or 20.7\%)}$$

$$\text{Lower limit: } .199 - (1.96 \times .004) = .191 \text{ (or 19.1\%)}$$

This narrow confidence interval supports the observation that ALA 01 has a relatively high

proportion of births to white teenage women; the lower confidence limit is above the 80th percentile value of 18.2 percent, which indicates that at least 80 percent of the HSA's had lower rates.

Confidence intervals for black teenage births in IND 03 are as follows:

Upper limit:  $.288 + (1.96 \times .025) = .337$  (or 33.7%)

Lower limit:  $.288 - (1.96 \times .025) = .239$  (or 23.9%)

At first, it may have appeared that the proportion of black teenage births in IND 03 was below the median value of 30.4 percent; however, the confidence limits extend from below the 10th percentile (24.3 percent) to above the 80th percentile (33.6 percent). With this very wide confidence interval, additional years of data are needed before reaching conclusions about the relative level of this risk measure in IND 03.

It should be noted that 6 of the 14 interstate HSA's are comprised of counties in both sample and nonsample States. In these cases, the standard errors for States with 50-percent sampling can be used to provide an upper bound for the standard errors.

### Combination of Risk Measures

It is important to examine the entire set of risk measures for a given area. For example, the very low risk level associated with the proportion of white births to unmarried women in ALA 01 (4.8 percent) does not necessarily mean the area does not have problems. As shown earlier, the proportion of births to teenage women in this HSA is greater than the proportion in at least 80 percent of the HSA's. In addition, the proportion of high-risk births (39.3 percent) and the proportion of births to women with low education (36.4 percent) are at relatively high levels; the lower confidence limits for these measures exceed the 70th and 90th percentiles, respectively. Thus it is not advisable to judge an area solely on the basis of one risk indicator.

In the present Note five of the risk measures (percent high risk, percent under 20 years of age, percent low education, percent

unmarried, and percent late prenatal care) are used to construct a maternal risk profile of the HSA's. Table G is a list of HSA's in which at least three of these five maternal risk measures are located in the highest quintile (80th percentile) of their respective distributions. Specific risk measures that are in the highest quintile are indicated by an "X." "NA" indicates that data are not available because the HSA's were designated in States in which reporting of that item was not required. These missing cases were ignored during the indexing procedure. Thus this list may obscure the severity of the risk profile for HSA's that are included despite missing data and omit entirely other HSA's that would have been included if the data were available.

Another caveat concerns the stability of the risk measures. Before concluding that at least three measures are indeed higher than those of 80 percent of the HSA's, confidence intervals should be calculated to assure that this is not due to chance variation.

A total of 23 HSA's were identified as "high maternal risk" on the basis of their white births, and 17 HSA's were identified based on their black births. Most of these HSA's had high proportions under 20 years of age, high risk (age-birth order), and low education, while the proportion unmarried was the measure least commonly found at a high level. Only four of the HSA's on this list had any measures in the lowest quintile.

The correspondence between "high-risk-profile" HSA's and observed infant mortality rates (IMR's) is noteworthy. For white births, 14 of the 23 HSA's on this list also had 1974-77 IMR's in the highest quintile. (Data will appear in a subsequent Note.) Of the 17 HSA's listed for black births, 8 also had 1974-77 IMR's in the highest quintile. It is important to note that other variables not considered here may affect the infant mortality rate, so an exact correspondence is not seen. Also, the stability of the IMR's was not considered. However, this comparison does show that areas identified on the basis of high maternal risk are likely to also exhibit high rates of infant mortality.

Table H presents the opposite end of the spectrum—HSA's identified on the basis of

Table G. Health service areas (HSA's) with high maternal risk profile<sup>1</sup> of births by race: United States, 1977

Race and HSA	Maternal risk measures in highest quintile				
	Percent under 20 years	Percent high risk	Percent low education	Percent unmarried	Percent late prenatal care
<u>White</u>					
ALA 01 <sup>•</sup> .....	X	X	X		
ALA 04 <sup>•</sup> .....	X	X	X		
ALA 06.....	X	X	X		
ARI 01.....		X	X	X	X
ARI 02.....		X	X	X	X
ARI 05.....		X	X		X
CAL 09.....	X	X	NA	NA	X
DC 02 <sup>•</sup> .....		X		X	X
FLA 06.....	X		X	X	
FLA 07.....			X	X	X
GA 02 <sup>•</sup> .....	X	X	X	NA	
KY 01.....	X	X	X		
KY 02 <sup>•</sup> .....	X	X	X		X
MO 05 <sup>•</sup> .....	X	X	X		X
NJ 03 <sup>•</sup> .....			X	X	X
NC 01 <sup>•</sup> .....	X	X	X		
TEN 02 <sup>•</sup> .....	X		X		X
TEX 02 <sup>•</sup> .....	X	X	NA	NA	X
TEX 04 <sup>•</sup> .....	X	X	NA	NA	X
TEX 09.....	X	X	NA	NA	X
TEX 12 <sup>•</sup> .....	X	X	NA	NA	X
WV 01 <sup>•</sup> .....	X	X	X		X
INT 15 <sup>•</sup> .....		X	X		X

See footnotes at end of table.

Table G. Health service areas (HSA's) with high maternal risk profile<sup>1</sup> of births by race: United States, 1977—Con.

Race and HSA	Maternal risk measures in highest quintile				
	Percent under 20 years	Percent high risk	Percent low education	Percent unmarried	Percent late prenatal care
<u>Black</u>					
ALA 02 <sup>•</sup> .....	X	X	X		X
ALA 04 <sup>•</sup> .....	X	X	X		
ALA 05.....		X	X		X
FLA 02.....	X	X		X	X
FLA 04.....	X	X	X	X	X
FLA 06 <sup>•</sup> .....	X	X	X	X	
FLA 07 <sup>•</sup> .....	X	X	X	X	X
FLA 08.....	X	X	X	X	X
GA 06.....	X	X	X	NA	
GA 07.....	X	X	X	NA	
ILL 01.....		X	X		X
LA 03.....	X	X			X
MIC 03 <sup>•</sup> .....	X	X	X		X
MIS 01 <sup>•</sup> .....	X	X	X		
MO 05 <sup>•</sup> .....	X	X	X	X	X
TEN 05 <sup>•</sup> .....	X		X		X
TEX 05.....	X	X	NA	NA	X

<sup>1</sup>High maternal risk HSA's include those with at least 3 of the 5 maternal risk measures shown here in the highest quintile.  
<sup>•</sup>Denotes HSA's with infant mortality rate (based on 1974-77 data) in the highest quintile.

low maternal risk. A larger number of areas fall into this categorization for white births (26 HSA's) than for black births (18 HSA's). About two-thirds of the HSA's on this list experienced 1974-77 IMR's that ranked in the lowest quintile.

#### Example of Data Use

The following example is presented to illustrate how health planners can utilize the maternal risk profile approach. ALA 04 is one of the few HSA's that appears in table G for both white and black births. Three maternal

risk measures are shown to be in the highest quintile:

	<i>Percent under 20 years</i>	<i>Percent high risk</i>	<i>Percent low education</i>
White births....	22.3	42.0	38.4
Black births....	36.2	66.8	51.2

However, before singling out this HSA for special attention on the basis of these factors, confidence intervals should be calculated using the formula for nonsample States given

Table H. Health service areas (HSA's) with low maternal risk profile<sup>1</sup> of births by race: United States, 1977

Race and HSA	Maternal risk measures in lowest quintile				
	Percent under 20 years	Percent high risk	Percent low education	Percent unmarried	Percent late prenatal care
<u>White</u>					
CAL 05 <sup>•</sup> .....	X	X	NA	NA	X
CON 01 <sup>•</sup> .....	X	X		NA	X
CON 02.....	X	X		NA	X
CON 03.....	X	X		NA	X
CON 04.....	X	X		NA	X
CON 05.....	X	X	X	NA	X
FLA 09 <sup>•</sup> .....	X	X			X
MD 02 <sup>•</sup> .....	X	X	X	NA	X
MAS 03 <sup>•</sup> .....	X	X		NA	X
MAS 05.....	X	X		NA	X
MIN 05 <sup>•</sup> .....	X	X	X		
NEB 02 <sup>•</sup> .....	X	X	X		
NJ 02.....	X	X			X
NJ 04 <sup>•</sup> .....	X	X	X		
NY 06 <sup>•</sup> .....	X	X	X	NA	X
NY 08 <sup>•</sup> .....	X	X	X	NA	X
NC 04 <sup>•</sup> .....	X	X		X	X
PA 06.....	X	X	X		NA
TEN 06.....		X		X	X
UTH 01 <sup>•</sup> .....	X		X	X	X
VA 02 <sup>•</sup> .....	X	X	X		NA
VA 04.....	X	X		X	NA
WIS 01 <sup>•</sup> .....	X	X	X		X
WIS 02 <sup>•</sup> .....	X	X	X		X
WIS 03.....	X	X	X		X
WIS 04 <sup>•</sup> .....	X	X	X		X

See footnotes at end of table.

Table H. Health service areas (HSA's) with low maternal risk profile<sup>1</sup> of births by race: United States, 1977—Con.

Race and HSA	Maternal risk measures in lowest quintile				
	Percent under 20 years	Percent high risk	Percent low education	Percent unmarried	Percent late prenatal care
<u>Black</u>					
CAL 04 <sup>•</sup> .....	X	X	NA	NA	X
CAL 05 <sup>•</sup> .....	X	X	NA	NA	X
CAL 07 <sup>•</sup> .....	X	X	NA	NA	X
CAL 08.....	X	X	NA	NA	X
CAL 10 <sup>•</sup> .....	X	X	NA	NA	X
CAL 11.....	X	X	NA	NA	X
CAL 13 <sup>•</sup> .....	X	X	NA	NA	X
CAL 14 <sup>•</sup> .....	X	X	NA	NA	X
COL 01 <sup>•</sup> .....	X	X	X	X	
COL 02 <sup>•</sup> .....	X	X	X	X	
DC 02.....	X	X	X		
KAN 02 <sup>•</sup> .....	X	X	X	X	
MD 02 <sup>•</sup> .....	X	X	X	NA	X
MD 03.....	X	X	X	NA	X
MAS 03 <sup>•</sup> .....	X	X	X	NA	X
MAS 04 <sup>•</sup> .....	X	X		NA	X
VA 02.....	X	X	X	X	NA
WAS 01 <sup>•</sup> .....	X	X	NA	X	

<sup>1</sup>Low maternal risk HSA's include those with at least 3 of the 5 maternal risk measures shown here in the lowest quintile.

<sup>•</sup>Denotes HSA's with infant mortality rate (based on 1974-77 data) in the lowest quintile.

earlier. The lower confidence limits for these measures are:

	<i>Percent under 20 years</i>	<i>Percent high risk</i>	<i>Percent low education</i>
White births....	21.2	40.7	37.3
Black births....	34.1	64.7	49.1

Referring to table D, it can be seen that all of these values are greater than the 80th percentile. Thus, it can be concluded that these

measures show greater risk than that of 80 percent of the HSA's.

This type of approach is presented as a technique that enables health planners to focus attention and resources on the areas with the most salient potential problems. However, risk measures that are not shown to be in the highest quintile should not be dismissed from further examination. In ALA 04 the proportion unmarried is not very high for white or black births; the upper confidence limits are below the 20th percentile for white births and the 40th percentile for black

births. But the proportion of births to mothers with late prenatal care may be at an undesirable level, particularly for black births. The proportion with late prenatal care for black births is 44.7 percent, and based on a lower confidence limit of 43.6 percent, it can be concluded that at least 60 percent of the HSA's have lower proportions.

If the risk measures for an HSA proved unstable (i.e., the confidence interval extended over a wide range of percentiles), additional years of data would be required before reaching any conclusions about the relative risk levels.

### HEALTH PLANNING STRATEGIES

The previous discussion illustrates how health planners can use natality data to: (1) identify areas with a potential for high infant mortality and (2) isolate factors which may be contributing to the problem. A more complete analysis of local area data should include other available indicators. The next question concerns what can be done about areas that exhibit a pattern of high maternal risks. This is discussed more extensively in the Rand algorithm.<sup>2</sup>

Improved family planning programs are one means to ameliorate a high maternal risk profile. The nature of the family planning improvements are suggested by the specific risk factors that emerge as problems. For example, a high proportion of births to teenage women might indicate that sex education and accessibility to family planning services for school-age women need attention, whereas a high

proportion of out-of-wedlock births may indicate that community-based family planning services are inadequate. Similarly, a disproportionate share of high-risk births or closely spaced births may show the need for better postpartum counseling services.

The particular combination of risk factors identified helps determine the most appropriate interventions and target groups. Some prevention-oriented programs should be directed at a specific population. For example, the identification of a factor such as low maternal education might point to high school dropouts as the target group for a variety of health-related and general education programs. Finally, low proportions with early prenatal care may indicate the need for more prenatal care programs or more intensive outreach within existing programs.

Although it was not discussed in this Note, the birth certificate also identifies the county, and often the hospital, where the birth occurred. This information can be very valuable in terms of defining obstetrical service areas. In particular, regionalization of perinatal care for high-risk pregnancies has been suggested as a means of reducing mortality.<sup>10</sup> Natality data can be used to evaluate the extent to which high-risk births are being referred to appropriate hospitals.

A more detailed approach involves examination of a combination of indicators in order to identify areas which exhibit unusual patterns of risk. One such approach using birth weight and perinatal mortality data has been suggested by Williams et al.<sup>13</sup> A subsequent Note will provide further analysis of low birth weight and natality data along these lines.

## REFERENCES

<sup>1</sup>National Center for Health Statistics: Infant mortality, by J. C. Kleinman. *Statistical Notes for Health Planners*. No. 2, Health Resources Administration. Rockville, Md., July 1976.

<sup>2</sup>The Rand Corporation: *Algorithms for Health Planners: Vol. 2, Infant Mortality*, by L. J. Harris, E. Keeler, and M. E. Michnich. R-2215/2-HEW. Santa Monica, Calif. The Rand Corporation, Aug. 1977.

<sup>3</sup>National Center for Health Statistics: A study of infant mortality from linked records by birth weight, period of gestation, and other variables, United States, 1960 live-birth cohort, by R. J. Armstrong. *Vital and Health Statistics*. Series 20-No. 12. DHEW Pub. No. (PHS) 79-1055. Public Health Service. Washington. U.S. Government Printing Office, May 1972.

<sup>4</sup>National Center for Health Statistics: A study of infant mortality from linked records by age of mother, total-birth order, and other variables, United States, 1960 live-birth cohort, by H. M. Vavra and L. J. Querec. Series 20-No. 14. DHEW Pub. No. (HRA) 74-1851. Health Resources Administration. Washington. U.S. Government Printing Office, Sept. 1973.

<sup>5</sup>National Center for Health Statistics: *Health, United States, 1979*. DHEW Pub. No. (PHS) 80-1232. Public Health Service. Washington. U.S. Government Printing Office, 1980.

<sup>6</sup>National Center for Health Statistics: Infant mortality rates, socioeconomic factors, United States, by B. MacMahon, M. G. Kovar, and J. J. Feldman. Series 22-No. 14. DHEW Pub. No. (HSM) 72-1045.

Health Services and Mental Health Administration. Washington. U.S. Government Printing Office, Mar. 1972.

<sup>7</sup>Gortmaker, S. L.: The effects of prenatal care upon the health of the newborn. *Am. J. Public Health*. 69(7): 653-660, July 1979.

<sup>8</sup>National Center for Health Statistics: Infant mortality rates, relationships with mother's reproductive history, United States, by B. MacMahon, M. G. Kovar, and J. J. Feldman. Series 22-No. 15. DHEW Pub. No. (HSM) 73-1976. Health Services and Mental Health Administration. Washington. U.S. Government Printing Office, Apr. 1973.

<sup>9</sup>Reed, D. M., and Stanley, F., eds.: *The Epidemiology of Prematurity*. Baltimore. Urban and Schwarzenberg, Inc., 1977.

<sup>10</sup>Shapiro, S., et al.: Relevance of correlates of infant deaths for significant morbidity at 1 year of age. *Am. J. Obstet. Gynecol.* 136(3): 363-373, Feb. 1980.

<sup>11</sup>Lee, K.-S., et al.: Neonatal mortality: An analysis of the recent improvement in the United States. *Am. J. Public Health*. 70(1): 15-21, Jan. 1980.

<sup>12</sup>National Center for Health Statistics: Comparability of reporting between the birth certificate and the National Natality Survey, by L. J. Querec. Series 2-No. 83. DHEW Pub. No. (PHS) 80-1357. Public Health Service. Washington. U.S. Government Printing Office, Apr. 1980.

<sup>13</sup>Williams, R. L., et al.: Monitoring perinatal mortality rates: California, 1970 to 1976. *Am. J. Obstet. Gynecol.* 136(5): 559-568, Mar. 1980.



## HEALTH SERVICE AREA CODES

The HSA codes used in this Note have been modified to be consistent with county boundaries. The codes are the same as those used by the Bureau of Health Manpower to produce the Area Resource File (Version 12). As a result of the redefinition, there are a total of 202 HSA's for which 1977 natality statistics have been calculated. This excludes Puerto Rico and other areas which are comprised of small parts of counties which cannot be defined.

The exceptions to the official HSA designations are as follows:

(a) The States requesting exemption from designating HSA's are redefined as follows:

<i>Official HSA code</i>	<i>Redefined HSA code</i>
None.....	D C 02
None.....	HAW 03
None.....	R I 04

(b) Interstate HSA's are listed with State name as INT (for interstate) on the last page of the print-out. The 14 interstate HSA's are defined as follows:

<i>Official HSA code</i>	<i>Redefined HSA code</i>
GA 01, TN 03.....	INT 02
GA 04, SC 05.....	INT 03
GA 05, AL 07.....	INT 04
IA 01, NE 04.....	INT 05
NE 03, IA 02.....	INT 06
IA 03, IL 10.....	INT 07
OH 01, KY 03.....	INT 08
ND 02, MN 01.....	INT 09
WI 07, MN 02.....	INT 10
ND 03, MN 03.....	INT 11
MO 01, KS 04.....	INT 12
MO 03, IL 11.....	INT 13
NY 04, PA 08.....	INT 14
TN 01, VA 06.....	INT 15

(c) HSA's officially listed as including parts of counties are redefined to include the following complete counties:

<i>Official HSA code</i>	<i>Counties included</i>
AK 01	All divisions in Alaska
AZ 01	Gila, Maricopa, Pinal
AZ 02	Cochise, Greenlee, Pima, Santa Cruz, Graham
AZ 03	Coconino, Yavapai, Apache, Navajo (includes AZ 04)
AZ 05	Mohave, Yuma
CT 01	Fairfield
CT 02	New Haven
CT 03	Middlesex, New London, Windham
CT 04	Hartford, Tolland
CT 05	Litchfield
IL 06	Area is not defined. Chicago is included in IL 07.
IL 07	Cook, Du Page
MA 01	Berkshire, Franklin, Hampden, Hampshire
MA 02	Worcester
MA 03	Essex, Middlesex
MA 04	Norfolk, Suffolk
MA 05	Barnstable, Bristol, Dukes, Nantucket, Plymouth
MA 06	Area is not defined. All of Essex and Middlesex Counties are included in MA 03.
NM 01	All counties in New Mexico (includes NM 02)
UT 01	All counties in Utah (includes UT 02).

Maternal risk measures by health service area (HSA) and race: United States, 1977

-----MATERNAL RISK MEASURES: 1977-----

HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
ALA 01	1	9.3	21.8	3.9	42.4	37.2	10.9	26.3	11084
ALA 01	2	8.0	19.9	3.9	39.3	36.4	4.8	23.2	9407
ALA 01	3	17.2	33.4	3.9	60.4	42.0	46.2	44.8	1632
ALA 01	4	-	2.2	6.7	22.2	37.8	2.2	15.6	45
ALA 02	1	10.7	24.8	3.8	49.3	39.2	25.7	31.2	3677
ALA 02	2	6.1	17.4	2.6	35.8	30.5	4.4	17.6	1982
ALA 02	3	16.3	33.6	5.2	65.3	49.5	51.1	47.2	1680
ALA 02	4	-	6.7	-	33.3	40.0	-	28.6	15
ALA 03	1	8.7	20.2	3.4	40.0	28.6	18.4	25.0	14063
ALA 03	2	6.4	15.9	3.4	33.6	27.5	4.1	17.2	9331
ALA 03	3	13.1	28.9	3.4	52.5	30.8	46.7	40.3	4703
ALA 03	4	6.9	17.2	13.8	51.7	21.4	6.9	34.5	29
ALA 04	1	11.7	26.0	3.8	48.6	41.8	16.8	28.3	7608
ALA 04	2	9.2	22.3	3.5	42.0	38.4	5.1	22.3	5528
ALA 04	3	18.3	36.2	4.5	66.8	51.2	47.3	44.7	2046
ALA 04	4	5.9	8.8	5.9	29.4	26.5	2.9	35.3	34
ALA 05	1	10.4	22.9	4.1	47.1	36.6	22.4	31.3	11392
ALA 05	2	6.4	16.4	3.5	35.5	27.9	4.0	19.3	6479
ALA 05	3	15.9	31.7	5.0	62.8	48.4	46.7	47.5	4849
ALA 05	4	1.6	9.4	4.7	32.8	32.8	1.6	39.7	64
ALA 06	1	11.5	25.5	4.8	51.4	36.7	27.0	37.5	13383
ALA 06	2	7.5	18.7	3.8	39.4	30.5	5.8	21.1	7155
ALA 06	3	16.2	33.4	6.0	65.3	43.9	51.5	56.6	6195
ALA 06	4	6.1	9.1	6.1	45.5	43.3	3.0	39.4	33
ALK 01	1	4.5	13.5	4.4	38.4	18.8	12.3	NA	8390
ALK 01	2	3.1	10.8	4.2	33.2	12.1	7.1	NA	5995
ALK 01	3	3.6	14.8	2.6	41.3	15.8	15.5	NA	310
ALK 01	4	8.4	21.3	5.2	53.1	38.7	26.6	NA	2085
ARI 01	1	6.8	17.4	4.4	43.8	30.8	13.9	31.2	23584
ARI 01	2	6.1	16.4	4.4	42.4	29.3	11.0	29.5	21283
ARI 01	3	15.6	31.2	4.0	60.7	43.1	47.5	43.3	1091
ARI 01	4	12.2	23.1	5.4	52.2	46.8	35.6	50.8	1210
ARI 02	1	5.6	16.4	4.4	42.2	30.1	14.5	41.1	13340
ARI 02	2	5.4	16.1	4.4	41.8	29.4	12.4	40.1	9379
ARI 02	3	8.7	23.6	2.9	45.5	26.5	35.2	47.2	415
ARI 02	4	7.3	17.2	5.9	46.9	45.3	35.5	54.1	546
ARI 03	1	7.4	18.3	7.5	53.6	35.7	21.7	54.9	5652
ARI 03	2	5.1	14.6	5.8	43.7	20.0	7.3	41.4	2513
ARI 03	3	17.4	39.1	-	56.5	28.6	54.6	65.0	46
ARI 03	4	9.1	20.9	9.1	61.7	50.6	34.5	67.5	3093

Maternal risk measures by health service area (HSA) and race: United States, 1977—Con.

-----MATERNAL RISK MEASURES: 1977-----									
HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
ARI 05	1	6.3	16.9	5.2	46.0	41.0	7.3	45.8	2272
ARI 05	2	6.3	16.5	5.4	45.5	40.6	6.7	44.8	2076
ARI 05	3	6.7	20.0	3.3	46.7	37.9	24.1	63.3	60
ARI 05	4	7.4	20.6	4.4	52.9	47.8	8.8	56.3	136
ARK 01	1	8.5	21.5	3.7	43.0	NA	8.7	NA	9962
ARK 01	2	7.9	20.8	3.7	41.7	NA	6.5	NA	9353
ARK 01	3	17.2	33.5	4.9	65.0	NA	47.7	NA	511
ARK 01	4	14.3	28.6	2.0	52.0	NA	14.3	NA	98
ARK 02	1	12.5	27.8	4.1	51.4	NA	20.7	NA	9652
ARK 02	2	9.6	23.7	3.6	42.3	NA	6.9	NA	6901
ARK 02	3	29.1	38.6	5.4	74.8	NA	56.2	NA	2712
ARK 02	4	5.1	10.3	5.1	35.9	NA	5.1	NA	39
ARK 03	1	9.5	21.5	3.0	43.0	NA	20.6	NA	8311
ARK 03	2	6.2	17.0	2.5	34.6	NA	6.8	NA	5717
ARK 03	3	17.1	31.8	3.9	62.2	NA	52.1	NA	2543
ARK 03	4	3.9	7.8	9.8	29.4	NA	-	NA	51
ARK 04	1	12.4	26.7	4.3	49.8	NA	24.8	NA	7812
ARK 04	2	6.8	18.7	3.5	37.3	NA	4.7	NA	4593
ARK 04	3	20.5	38.3	5.5	67.8	NA	51.9	NA	3200
ARK 04	4	-	10.5	10.5	47.4	NA	-	NA	19
CAL 01	1	5.8	16.2	3.6	34.0	NA	NA	25.8	9157
CAL 01	2	5.5	15.7	3.6	32.9	NA	NA	24.5	8512
CAL 01	3	7.4	20.7	1.7	44.6	NA	NA	25.8	121
CAL 01	4	10.5	22.3	5.0	50.2	NA	NA	45.8	524
CAL 02	1	5.5	16.0	3.8	33.1	NA	NA	21.8	16903
CAL 02	2	5.3	15.4	3.8	32.3	NA	NA	21.1	14682
CAL 02	3	9.8	25.6	2.6	43.3	NA	NA	29.7	1390
CAL 02	4	2.9	10.4	5.5	30.8	NA	NA	21.1	831
CAL 03	1	4.1	13.3	3.3	28.9	NA	NA	21.3	8558
CAL 03	2	3.7	12.8	3.2	28.0	NA	NA	20.1	7425
CAL 03	3	8.8	18.9	3.2	35.5	NA	NA	30.3	567
CAL 03	4	4.6	14.8	4.2	33.6	NA	NA	28.7	566
CAL 04	1	3.4	9.7	6.8	31.5	NA	NA	22.7	17177
CAL 04	2	2.2	7.3	6.9	29.4	NA	NA	19.6	11051
CAL 04	3	9.4	22.1	5.1	41.9	NA	NA	29.0	3117
CAL 04	4	1.6	5.8	8.0	28.3	NA	NA	27.6	3009
CAL 05	1	4.8	13.2	5.1	32.0	NA	NA	19.0	23614
CAL 05	2	3.5	10.5	5.3	28.4	NA	NA	16.3	16734
CAL 05	3	9.9	24.3	3.3	44.5	NA	NA	27.1	5016
CAL 05	4	3.1	7.2	7.8	29.9	NA	NA	21.5	1864

Maternal risk measures by health service area (HSA) and race: United States, 1977—Con.

-----MATERNAL RISK MEASURES: 1977-----

HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
CAL 06	1	7.4	19.0	3.7	37.8	NA	NA	26.9	12594
CAL 06	2	7.1	18.4	3.6	36.9	NA	NA	25.9	11462
CAL 06	3	12.2	29.8	1.5	52.5	NA	NA	38.6	671
CAL 06	4	7.6	18.4	7.4	39.9	NA	NA	33.5	461
CAL 07	1	5.1	13.7	5.0	33.1	NA	NA	20.5	18201
CAL 07	2	5.0	13.5	4.9	32.8	NA	NA	20.1	15691
CAL 07	3	9.7	24.1	2.9	43.0	NA	NA	29.5	1953
CAL 07	4	2.9	8.4	7.5	29.5	NA	NA	17.7	1460
CAL 08	1	5.0	15.1	4.1	34.5	NA	NA	22.2	10311
CAL 08	2	5.1	15.2	4.0	34.2	NA	NA	22.3	9073
CAL 08	3	5.9	20.2	2.4	41.5	NA	NA	23.3	574
CAL 08	4	3.0	9.0	6.6	31.9	NA	NA	19.8	664
CAL 09	1	8.3	20.3	4.0	41.7	NA	NA	34.1	22741
CAL 09	2	7.9	19.7	4.0	40.9	NA	NA	33.3	20672
CAL 09	3	15.5	31.3	3.2	56.1	NA	NA	44.8	1330
CAL 09	4	6.8	18.9	6.8	40.6	NA	NA	38.2	739
CAL 10	1	5.3	14.5	4.7	35.0	NA	NA	21.7	11848
CAL 10	2	5.2	14.2	4.6	34.7	NA	NA	21.1	10897
CAL 10	3	10.8	25.2	2.8	45.2	NA	NA	29.1	500
CAL 10	4	3.6	10.2	8.0	31.5	NA	NA	28.0	451
CAL 11	1	5.8	16.2	5.7	39.7	NA	NA	31.3	118643
CAL 11	2	5.1	15.3	5.7	38.8	NA	NA	32.2	93361
CAL 11	3	10.5	25.3	4.7	47.8	NA	NA	28.4	18395
CAL 11	4	2.4	7.0	8.6	30.8	NA	NA	26.7	6887
CAL 12	1	6.6	17.5	4.2	37.1	NA	NA	29.6	22864
CAL 12	2	6.4	17.1	4.1	36.4	NA	NA	28.9	20556
CAL 12	3	10.5	25.5	4.1	47.0	NA	NA	34.7	1601
CAL 12	4	4.0	11.3	5.5	33.2	NA	NA	38.7	707
CAL 13	1	4.1	12.7	4.6	31.9	NA	NA	22.4	26689
CAL 13	2	4.0	12.8	4.5	31.7	NA	NA	22.2	24900
CAL 13	3	9.9	21.5	4.0	39.4	NA	NA	28.0	548
CAL 13	4	2.3	7.1	8.2	31.0	NA	NA	23.8	1241
CAL 14	1	4.8	15.0	4.5	33.5	NA	NA	24.0	28517
CAL 14	2	4.6	14.7	4.3	32.6	NA	NA	23.1	24082
CAL 14	3	8.4	24.3	2.7	42.9	NA	NA	27.9	2250
CAL 14	4	3.1	9.6	8.8	33.2	NA	NA	29.4	2185
COL 01	1	5.1	13.7	3.8	36.3	20.6	12.1	22.6	28397
COL 01	2	4.8	13.1	3.8	35.4	20.1	10.4	21.9	26319
COL 01	3	10.8	24.8	3.6	51.7	27.4	42.6	30.9	1446
COL 01	4	4.0	10.9	5.5	36.9	26.3	11.6	36.3	632

Maternal risk measures by health service area (HSA) and race: United States, 1977—Con.

-----MATERNAL RISK MEASURES: 1977-----

HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
COL 02	1	6.0	17.9	3.7	41.1	25.5	7.3	26.1	10536
COL 02	2	5.9	17.8	3.7	40.8	25.2	7.1	25.5	9689
COL 02	3	9.8	25.1	3.7	48.9	25.2	15.0	32.0	521
COL 02	4	3.1	8.9	4.0	35.6	34.1	2.5	34.4	326
COL 03	1	5.8	15.1	3.8	38.4	20.2	7.1	26.6	4142
COL 03	2	5.9	15.2	3.6	38.1	20.0	6.7	26.3	4054
COL 03	3	-	12.5	12.5	37.5	14.3	25.0	12.5	8
COL 03	4	3.8	10.0	10.0	53.8	34.3	25.0	41.8	80
CON 01	1	4.7	11.1	6.8	32.2	20.5	NA	18.3	9253
CON 01	2	2.9	7.4	7.3	28.0	17.7	NA	13.8	7733
CON 01	3	13.8	30.2	4.6	54.7	36.6	NA	42.0	1422
CON 01	4	14.3	18.4	-	39.8	26.7	NA	27.3	98
CON 02	1	4.8	12.5	3.9	32.2	22.0	NA	12.3	8909
CON 02	2	3.2	9.7	3.9	28.1	19.2	NA	9.7	7555
CON 02	3	14.3	29.9	3.6	56.2	39.3	NA	27.3	1291
CON 02	4	-	3.2	12.7	34.9	10.2	NA	13.6	63
CON 03	1	4.2	12.4	3.2	29.2	19.9	NA	14.1	6166
CON 03	2	3.8	11.9	3.2	28.6	18.9	NA	13.7	5787
CON 03	3	12.2	23.4	2.6	43.6	36.1	NA	21.9	312
CON 03	4	-	4.5	6.0	22.4	32.3	NA	9.2	67
CON 04	1	5.4	12.6	4.5	26.3	19.8	NA	10.3	10676
CON 04	2	3.9	10.1	4.5	24.2	18.6	NA	9.5	9191
CON 04	3	15.4	29.7	3.9	40.2	35.2	NA	18.5	1339
CON 04	4	4.1	9.6	8.2	34.3	22.8	NA	20.5	146
CON 05	1	3.5	9.2	4.5	24.6	16.2	NA	12.6	1654
CON 05	2	3.4	9.2	4.6	24.6	15.8	NA	11.9	1626
CON 05	3	10.0	10.0	-	30.0	57.1	NA	55.6	20
CON 05	4	-	-	-	-	-	NA	50.0	8
DEL 01	1	7.8	18.7	3.8	38.9	21.8	20.5	22.2	8630
DEL 01	2	4.6	13.6	4.1	32.8	17.4	8.7	18.6	6659
DEL 01	3	19.8	37.7	2.1	61.0	38.2	62.2	35.1	1883
DEL 01	4	-	-	9.1	27.3	14.6	4.7	23.8	88
D C 02	1	11.0	22.9	5.2	47.1	30.9	51.3	40.0	10144
D C 02	2	2.3	5.8	9.8	41.3	18.1	15.0	29.5	1599
D C 02	3	12.8	26.4	4.3	48.3	33.5	57.8	42.1	8339
D C 02	4	1.9	5.7	4.7	44.3	18.3	14.0	50.0	106
FLA 01	1	8.4	20.9	3.5	40.4	29.4	18.4	29.9	13217
FLA 01	2	5.8	17.1	2.9	33.4	24.6	6.1	23.4	9326
FLA 01	3	15.6	32.0	4.8	59.3	40.7	52.4	46.7	3607
FLA 01	4	1.8	5.3	7.0	29.9	35.3	1.8	37.8	284

Maternal risk measures by health service area (HSA) and race: United States, 1977-Con.

-----MATERNAL RISK MEASURES: 1977-----									
HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
FLA 02	1	10.6	23.0	3.9	46.3	33.9	22.5	39.4	8210
FLA 02	2	7.1	18.0	3.8	38.6	29.3	8.0	32.6	5852
FLA 02	3	19.5	35.6	4.0	65.9	45.6	58.8	56.6	2327
FLA 02	4	3.2	12.9	6.5	35.5	25.0	9.7	46.4	31
FLA 03	1	9.2	21.7	3.5	40.8	30.3	22.2	32.5	14320
FLA 03	2	6.4	17.6	3.4	34.5	27.2	9.0	26.3	10206
FLA 03	3	16.9	33.2	3.6	57.6	38.8	57.2	52.3	3920
FLA 03	4	1.0	3.1	7.2	32.5	20.0	4.1	27.5	194
FLA 04	1	9.0	20.5	3.9	42.0	33.0	19.4	29.5	16933
FLA 04	2	6.2	16.5	4.1	36.6	29.4	9.1	24.9	13390
FLA 04	3	20.2	36.9	3.0	63.7	46.6	60.4	47.5	3402
FLA 04	4	2.8	6.4	5.7	31.2	44.2	5.0	29.6	141
FLA 05	1	8.8	20.7	3.8	42.3	30.0	20.7	29.0	11409
FLA 05	2	5.9	16.7	3.9	35.9	25.4	10.1	25.3	8669
FLA 05	3	18.8	34.8	3.2	63.8	44.6	57.2	45.5	2595
FLA 05	4	2.8	9.0	6.9	37.9	29.1	4.2	39.8	145
FLA 06	1	10.7	23.7	3.7	44.3	39.9	20.1	29.6	10652
FLA 06	2	7.9	19.9	3.6	38.9	37.2	9.7	25.5	8321
FLA 06	3	20.8	37.5	3.7	64.0	49.6	58.4	44.8	2261
FLA 06	4	7.1	17.1	10.0	48.6	62.3	12.9	44.1	70
FLA 07	1	10.8	23.2	4.2	47.8	36.7	26.4	43.8	8288
FLA 07	2	6.6	17.0	4.2	37.8	28.9	10.3	35.8	5686
FLA 07	3	20.2	37.4	4.2	70.1	53.9	62.5	60.5	2551
FLA 07	4	3.9	7.8	5.9	37.3	36.0	7.8	36.6	51
FLA 08	1	7.7	18.0	4.0	39.5	25.8	22.1	31.5	9377
FLA 08	2	3.3	10.5	4.0	29.7	17.4	7.4	23.4	6787
FLA 08	3	20.0	38.6	3.6	66.1	48.2	62.0	53.6	2521
FLA 08	4	1.5	5.8	14.5	34.8	26.9	8.7	37.1	69
FLA 09	1	7.3	17.6	6.7	40.9	29.5	23.1	18.9	18516
FLA 09	2	3.7	11.4	7.2	32.4	24.3	7.4	16.7	12198
FLA 09	3	14.5	30.3	5.8	58.0	39.8	55.2	22.7	6104
FLA 09	4	1.4	7.5	7.9	33.2	34.0	4.7	34.5	214
GA 02	1	10.9	24.2	4.0	44.6	45.7	NA	22.5	8175
GA 02	2	10.3	23.4	4.1	43.2	45.2	NA	21.4	7286
GA 02	3	15.8	31.0	3.4	56.4	50.6	NA	31.1	873
GA 02	4	12.5	12.5	25.0	50.0	25.0	NA	14.3	16
GA 03	1	8.3	18.8	4.0	38.6	29.0	NA	28.5	32192
GA 03	2	5.4	14.3	3.8	31.9	24.3	NA	22.8	21396
GA 03	3	14.6	28.6	4.2	52.6	38.7	NA	40.1	10471
GA 03	4	-	3.1	9.9	28.3	14.8	NA	33.3	325

Maternal risk measures by health service area (HSA) and race: United States, 1977—Con.

-----MATERNAL RISK MEASURES: 1977-----									
HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
GA 06	1	12.1	25.8	3.4	50.3	42.5	NA	32.1	10349
GA 06	2	6.7	17.5	3.3	36.9	31.5	NA	20.0	5309
GA 06	3	17.8	34.7	3.5	64.4	54.1	NA	45.2	5903
GA 06	4	8.7	13.0	8.7	52.2	47.8	NA	40.9	46
GA 07	1	11.5	24.4	3.4	47.2	38.3	NA	27.5	10662
GA 07	2	7.7	19.1	2.9	38.0	31.6	NA	20.1	6501
GA 07	3	17.9	33.6	4.1	62.6	48.9	NA	39.5	3991
GA 07	4	5.9	12.9	5.9	41.2	39.2	NA	30.5	170
HAW 03	1	4.0	12.7	4.9	39.0	17.4	10.7	28.8	16917
HAW 03	2	3.1	11.6	3.6	32.9	13.1	10.3	29.2	4271
HAW 03	3	2.5	16.2	3.0	37.9	15.7	6.1	35.2	396
HAW 03	4	4.3	12.9	5.3	41.2	18.9	10.9	28.4	12250
IDA 01	1	4.8	14.5	4.7	39.5	NA	NA	NA	18875
IDA 01	2	4.8	14.4	4.7	39.4	NA	NA	NA	18416
IDA 01	3	3.3	21.7	-	30.0	NA	NA	NA	60
IDA 01	4	7.3	18.6	5.0	45.6	NA	NA	NA	399
ILL 01	1	6.0	15.9	3.3	38.1	26.2	11.1	28.4	8626
ILL 01	2	5.3	14.9	3.3	36.2	24.4	7.9	26.8	7963
ILL 01	3	16.5	29.0	2.9	61.5	49.8	53.8	48.2	613
ILL 01	4	2.0	8.0	4.0	38.0	31.3	4.0	36.0	50
ILL 02	1	6.2	16.6	3.5	39.2	21.7	10.7	19.1	11029
ILL 02	2	5.5	15.5	3.5	37.7	20.3	7.3	18.7	10270
ILL 02	3	16.4	33.5	2.3	61.6	42.4	60.2	24.9	696
ILL 02	4	3.2	9.5	4.8	34.9	35.0	4.8	28.8	63
ILL 03	1	7.0	18.0	4.0	39.3	22.2	11.0	21.8	8668
ILL 03	2	6.6	17.3	3.9	38.3	21.2	8.9	21.2	8250
ILL 03	3	18.1	33.2	4.9	61.4	42.4	58.1	35.7	370
ILL 03	4	6.3	10.4	10.4	47.9	34.0	4.2	23.9	48
ILL 04	1	6.8	16.9	3.8	38.3	21.9	11.5	29.2	12196
ILL 04	2	6.3	15.8	3.8	36.5	20.7	7.6	27.7	11096
ILL 04	3	13.1	30.1	3.9	58.8	36.0	56.6	45.8	997
ILL 04	4	3.9	6.8	9.7	30.1	16.7	3.9	32.7	103
ILL 05	1	8.3	20.8	4.1	42.0	27.2	9.7	25.4	8970
ILL 05	2	7.9	20.2	4.1	40.7	26.6	7.4	24.4	8475
ILL 05	3	17.2	33.7	4.6	65.6	41.6	55.5	43.0	436
ILL 05	4	3.4	13.6	5.1	47.5	20.7	3.4	40.7	59
ILL 07	1	7.2	16.8	5.8	43.9	32.3	27.1	29.0	93307
ILL 07	2	3.5	10.3	6.2	35.7	27.6	9.2	23.6	61200
ILL 07	3	15.2	31.1	4.4	61.6	43.5	65.3	40.3	29944
ILL 07	4	0.9	3.2	12.6	32.7	10.1	4.7	28.0	2163

Maternal risk measures by health service area (HSA) and race: United States, 1977-Con.

-----MATERNAL RISK MEASURES: 1977-----

HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
ILL 08	1	4.9	13.8	4.6	38.3	24.5	10.6	22.8	13693
ILL 08	2	4.2	12.6	4.6	36.4	23.1	7.2	21.3	12476
ILL 08	3	13.2	28.1	3.9	61.0	41.3	51.9	40.0	1055
ILL 08	4	1.2	8.6	8.0	33.3	20.6	2.5	23.6	162
ILL 09	1	5.9	14.7	4.2	39.6	21.4	12.5	21.8	8145
ILL 09	2	4.4	12.5	4.0	36.3	18.6	6.7	19.7	7047
ILL 09	3	16.1	30.2	4.5	61.8	40.6	53.5	36.1	1017
ILL 09	4	2.5	7.4	12.4	44.4	22.8	2.5	26.3	81
IND 01	1	6.8	17.9	3.9	41.9	27.1	14.2	23.0	33076
IND 01	2	5.7	16.1	3.9	39.1	25.4	8.1	21.6	28338
IND 01	3	13.7	28.9	4.1	59.5	37.2	52.3	39.3	4564
IND 01	4	3.5	8.6	6.9	33.9	28.7	5.2	30.7	174
IND 02	1	8.3	20.3	3.2	41.1	29.1	15.8	24.7	32762
IND 02	2	7.1	18.5	3.1	38.6	27.4	9.8	21.8	28610
IND 02	3	17.5	34.2	3.3	59.5	44.2	59.7	44.4	3935
IND 02	4	2.8	8.3	6.5	32.3	25.1	2.8	20.0	217
IND 03	1	7.7	19.4	3.6	40.0	27.3	9.3	22.7	19360
IND 03	2	7.6	19.2	3.5	39.5	27.2	7.8	22.2	18618
IND 03	3	11.8	28.8	5.0	56.7	30.8	52.9	37.0	647
IND 03	4	-	2.1	6.3	30.5	32.2	6.3	27.3	95
KAN 01	1	5.6	16.0	3.3	37.8	19.1	6.9	25.0	6953
KAN 01	2	5.5	15.7	3.3	37.6	18.7	6.3	24.7	6822
KAN 01	3	17.3	34.6	2.5	54.3	36.3	52.5	42.0	81
KAN 01	4	10.0	20.0	4.0	42.0	36.7	12.0	34.0	50
KAN 02	1	5.6	17.0	3.4	37.2	19.4	9.8	25.2	9639
KAN 02	2	5.3	16.3	3.4	36.5	18.1	7.5	23.5	8521
KAN 02	3	10.5	26.3	3.1	48.6	30.5	35.4	36.0	773
KAN 02	4	3.2	11.9	4.1	27.5	25.9	8.7	42.0	345
KAN 03	1	6.3	18.0	2.9	38.5	22.5	10.9	20.0	12966
KAN 03	2	5.6	16.9	2.8	36.8	21.3	8.0	19.0	11832
KAN 03	3	15.7	33.4	3.3	59.8	34.2	51.1	30.4	893
KAN 03	4	6.6	17.4	3.7	44.4	35.7	7.1	28.6	241
KY 01	1	9.1	21.2	3.5	41.9	33.1	14.4	27.5	29048
KY 01	2	8.1	19.5	3.5	39.6	31.9	8.3	24.4	24854
KY 01	3	15.8	32.6	2.9	58.1	40.9	54.2	45.0	3906
KY 01	4	1.0	4.2	4.9	28.5	36.4	0.7	47.1	288
KY 02	1	10.4	24.2	4.5	46.5	44.5	10.6	35.4	25026
KY 02	2	10.1	23.8	4.5	46.0	44.8	8.5	34.8	23850
KY 02	3	16.4	33.3	3.6	57.6	39.3	55.6	49.6	1100
KY 02	4	4.0	9.2	7.9	34.2	27.6	1.3	31.9	76



Maternal risk measures by health service area (HSA) and race: United States, 1977-Con.

-----MATERNAL RISK MEASURES: 1977-----

HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
LA 01	1	8.9	21.2	4.1	46.3	34.7	22.6	23.3	26885
LA 01	2	6.0	16.1	3.8	36.8	25.8	6.4	12.9	15429
LA 01	3	13.1	28.4	4.3	58.8	45.9	45.9	36.4	11012
LA 01	4	6.1	19.8	11.3	65.3	64.4	6.1	45.8	444
LA 02	1	9.0	21.7	4.3	46.6	33.6	19.7	25.9	27526
LA 02	2	6.9	18.2	3.7	39.8	27.4	6.6	17.0	17700
LA 02	3	12.7	28.1	5.4	59.1	44.6	43.8	42.0	9685
LA 02	4	4.3	14.9	9.9	41.8	40.6	3.6	34.5	141
LA 03	1	11.7	25.7	3.7	50.4	34.2	25.6	31.9	20606
LA 03	2	7.1	19.4	3.1	39.5	26.9	6.1	19.4	11799
LA 03	3	18.1	34.4	4.7	65.4	44.1	52.4	46.7	8703
LA 03	4	1.9	7.7	-	36.5	32.3	1.0	46.7	104
ME 01	1	5.6	16.7	3.1	36.6	22.0	11.0	21.6	16147
ME 01	2	5.6	16.7	3.1	36.4	21.8	11.0	21.5	15906
ME 01	3	4.2	12.7	4.2	40.9	22.1	14.1	33.3	71
ME 01	4	7.7	17.1	5.3	50.6	46.2	13.1	25.6	170
MD 01	1	6.1	17.9	4.8	39.7	21.4	NA	21.0	4087
MD 01	2	5.7	17.3	4.8	38.9	20.8	NA	19.8	3888
MD 01	3	14.9	31.0	5.2	60.3	32.6	NA	45.8	174
MD 01	4	-	8.0	4.0	24.0	40.0	NA	27.3	25
MD 02	1	2.5	6.8	6.9	30.5	10.5	NA	12.2	6831
MD 02	2	2.2	6.2	7.0	29.4	9.7	NA	10.4	5664
MD 02	3	4.8	13.1	5.8	39.0	16.7	NA	22.5	873
MD 02	4	-	0.7	9.2	27.2	7.6	NA	19.0	294
MD 03	1	5.7	14.5	4.7	36.2	17.5	NA	21.8	12270
MD 03	2	4.3	12.4	4.6	33.2	16.2	NA	18.2	7696
MD 03	3	8.3	18.7	4.5	41.3	20.0	NA	27.9	4296
MD 03	4	1.8	7.6	10.1	39.2	15.5	NA	29.7	278
MD 04	1	8.3	19.0	3.6	39.7	26.8	NA	19.2	28784
MD 04	2	4.5	12.6	3.7	30.7	20.6	NA	13.2	18812
MD 04	3	16.1	32.3	3.2	57.9	39.7	NA	30.8	9508
MD 04	4	2.8	6.9	8.0	34.3	23.6	NA	28.8	464
MD 05	1	9.6	22.8	3.4	42.8	28.9	NA	23.4	3860
MD 05	2	6.4	17.3	3.6	35.9	24.2	NA	18.5	2770
MD 05	3	17.8	37.2	3.1	61.0	41.1	NA	36.3	1076
MD 05	4	7.1	7.1	-	21.4	21.4	NA	7.1	14
MAS 01	1	5.0	13.5	3.9	34.6	23.1	NA	17.0	9475
MAS 01	2	4.7	12.7	3.9	33.3	22.3	NA	16.4	8815
MAS 01	3	10.2	26.3	4.0	53.7	35.5	NA	23.8	596
MAS 01	4	1.6	12.5	10.9	39.1	23.8	NA	32.8	64

Maternal risk measures by health service area (HSA) and race: United States, 1977—Con.

-----MATERNAL RISK MEASURES: 1977-----

HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
MAS 02	1	4.0	13.1	3.9	34.1	23.3	NA	15.0	8062
MAS 02	2	3.9	13.0	3.9	33.7	22.9	NA	14.7	7856
MAS 02	3	12.3	22.6	2.6	53.6	40.9	NA	29.3	155
MAS 02	4	2.0	5.9	5.9	35.3	29.4	NA	23.5	51
MAS 03	1	3.0	9.4	5.7	31.5	17.6	NA	11.1	23137
MAS 03	2	3.0	9.3	5.7	31.2	17.3	NA	10.8	22248
MAS 03	3	4.6	15.0	6.9	43.4	27.8	NA	21.3	594
MAS 03	4	1.0	3.1	6.8	25.1	15.3	NA	10.7	295
MAS 04	1	4.7	12.5	6.0	36.8	23.1	NA	14.2	13916
MAS 04	2	3.3	9.8	6.3	33.6	19.6	NA	11.9	11000
MAS 04	3	10.9	24.3	4.8	50.9	37.0	NA	24.0	2643
MAS 04	4	1.5	5.5	5.9	28.2	31.2	NA	15.5	273
MAS 05	1	3.7	11.9	5.0	32.6	23.3	NA	13.7	13383
MAS 05	2	3.6	11.8	5.0	32.3	23.2	NA	13.6	13021
MAS 05	3	9.3	19.3	6.3	46.8	28.0	NA	18.8	269
MAS 05	4	2.2	10.8	7.5	40.9	23.1	NA	18.6	93
MIC 01	1	6.1	16.2	4.0	40.0	24.6	18.5	21.0	67355
MIC 01	2	3.9	12.4	4.0	33.8	20.7	7.8	15.8	49590
MIC 01	3	12.4	27.6	3.7	58.1	36.2	49.8	36.9	17071
MIC 01	4	2.7	8.2	9.2	39.6	21.5	5.2	24.6	694
MIC 02	1	5.7	16.1	3.1	38.4	21.2	10.4	25.0	10602
MIC 02	2	5.3	15.4	3.0	37.2	20.4	8.4	24.3	9880
MIC 02	3	13.2	27.8	3.2	56.3	32.9	42.7	35.5	623
MIC 02	4	5.1	12.1	11.1	50.5	30.2	7.1	28.6	99
MIC 03	1	7.4	18.8	3.2	40.6	27.6	16.0	30.3	12048
MIC 03	2	6.0	16.5	3.0	37.0	24.9	10.2	27.6	10396
MIC 03	3	16.8	34.6	3.6	65.0	45.9	55.3	47.1	1528
MIC 03	4	7.3	14.5	11.3	48.4	28.9	15.3	44.7	124
MIC 04	1	6.1	15.9	3.2	38.3	22.4	11.7	26.6	17206
MIC 04	2	5.2	14.4	3.2	36.1	20.6	8.2	25.1	15765
MIC 04	3	16.2	34.5	3.2	64.4	41.9	54.2	41.8	1300
MIC 04	4	4.3	17.0	7.1	44.0	40.7	14.9	44.1	141
MIC 05	1	7.4	19.5	3.1	41.1	27.3	17.4	21.3	9518
MIC 05	2	5.7	17.0	3.0	36.7	25.0	9.9	19.5	7784
MIC 05	3	15.0	31.2	3.8	61.2	37.7	51.5	29.6	1698
MIC 05	4	11.1	16.7	8.3	44.4	34.3	25.0	25.7	36
MIC 06	1	6.1	16.6	3.2	39.6	22.6	11.9	26.0	11994
MIC 06	2	5.4	15.1	3.2	37.8	21.3	8.4	25.3	10965
MIC 06	3	15.5	33.6	1.8	59.1	37.8	52.3	32.8	927
MIC 06	4	3.9	20.6	6.9	52.0	34.0	14.7	42.6	102

Maternal risk measures by health service area (HSA) and race: United States, 1977—Con.

-----MATERNAL RISK MEASURES: 1977-----									
HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
MIC 07	1	5.3	16.4	4.3	39.7	22.0	8.1	25.0	4633
MIC 07	2	5.2	16.4	4.3	39.6	21.6	7.9	24.7	4569
MIC 07	3	26.0	20.0	-	40.0	60.0	20.0	60.0	5
MIC 07	4	6.8	17.0	-	49.2	52.5	20.3	42.1	59
MIC 08	1	5.4	16.7	3.9	37.8	16.9	7.2	30.1	5117
MIC 08	2	5.1	16.5	3.9	37.3	15.8	7.0	29.4	4915
MIC 08	3	8.3	18.8	2.1	43.8	21.7	8.7	43.8	48
MIC 08	4	14.3	22.7	3.9	51.3	50.7	15.2	48.7	154
MIN 04	1	4.0	12.8	5.6	39.3	13.5	7.2	25.8	7288
MIN 04	2	3.9	12.7	5.6	39.0	12.9	6.9	25.5	7148
MIN 04	3	-	-	-	25.0	12.5	12.5	25.0	8
MIN 04	4	9.9	24.2	5.3	59.9	45.0	26.5	42.6	132
MIN 05	1	3.7	10.6	4.1	30.5	11.4	12.4	22.1	28130
MIN 05	2	3.1	9.5	4.1	28.9	9.8	10.0	20.9	26189
MIN 05	3	13.4	28.9	3.3	54.1	30.1	51.0	37.3	1198
MIN 05	4	8.1	17.1	5.0	46.3	36.1	35.4	43.4	743
MIN 06	1	3.8	12.0	4.5	34.4	9.5	6.3	25.8	8293
MIN 06	2	3.8	11.9	4.5	34.4	9.3	6.2	25.7	8240
MIN 06	3	-	-	28.6	42.9	14.3	14.3	-	7
MIN 06	4	4.4	17.4	2.2	32.6	35.6	15.6	35.6	46
MIN 07	1	3.7	11.1	4.4	32.9	12.0	6.7	33.4	6007
MIN 07	2	3.7	11.1	4.4	32.8	11.9	6.7	33.4	5948
MIN 07	3	-	-	15.4	23.1	7.7	-	20.0	13
MIN 07	4	4.4	10.9	8.7	52.2	26.1	2.2	39.1	46
MIS 01	1	12.1	26.0	4.2	51.2	41.8	25.0	28.8	45485
MIS 01	2	7.2	18.9	3.3	37.4	30.7	4.4	18.4	23410
MIS 01	3	17.5	33.8	5.1	65.9	53.6	47.3	39.7	21781
MIS 01	4	6.8	15.7	10.2	52.7	52.4	11.6	48.1	294
MO 02	1	7.0	18.0	3.8	39.9	24.3	8.7	24.4	16003
MO 02	2	6.8	17.6	3.8	39.3	23.7	7.2	23.4	15210
MO 02	3	13.7	29.4	4.2	58.1	36.0	46.7	43.7	644
MO 02	4	3.4	7.4	7.4	31.5	38.1	6.7	37.4	149
MO 04	1	7.1	19.2	4.5	41.5	27.0	8.3	24.3	8547
MO 04	2	7.0	19.2	4.5	41.4	26.8	7.9	24.1	8396
MO 04	3	13.3	22.9	3.6	43.4	35.4	48.2	32.9	83
MO 04	4	5.9	10.3	4.4	44.1	40.0	5.9	31.8	68
MO 05	1	10.0	22.7	4.6	46.1	36.9	14.2	34.4	8003
MO 05	2	9.2	21.2	4.4	43.1	34.7	9.3	32.6	7281
MO 05	3	19.2	39.0	5.6	78.8	59.2	65.8	52.1	692
MO 05	4	-	10.0	10.0	30.0	26.7	3.3	41.4	30

Maternal risk measures by health service area (HSA) and race: United States, 1977—Con.

-----MATERNAL RISK MEASURES: 1977-----

HSA	RACE	% UNDER 1P YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
MON 01	1	5.0	15.1	3.6	37.4	18.7	NA	22.3	13315
MON 01	2	4.3	13.7	3.6	35.1	15.8	NA	20.4	11952
MON 01	3	8.5	17.0	-	28.8	29.3	NA	20.7	59
MON 01	4	10.8	28.0	3.1	59.4	44.8	NA	39.8	1304
NEB 01	1	4.6	13.2	4.2	36.7	14.9	6.7	24.2	10563
NEB 01	2	4.4	12.9	4.2	36.1	14.1	5.8	23.5	10337
NEB 01	3	10.0	20.0	-	35.0	30.0	20.0	45.0	20
NEB 01	4	13.1	29.1	5.3	62.1	53.2	47.6	56.2	206
NEB 02	1	3.6	11.0	3.5	29.8	13.3	7.7	21.2	5326
NEB 02	2	3.4	10.7	3.4	29.1	12.6	6.9	20.5	5168
NEB 02	3	6.1	19.5	6.1	51.2	34.6	40.2	35.5	82
NEB 02	4	9.2	17.1	2.6	48.7	37.8	23.7	48.6	76
NEV 01	1	4.8	15.2	4.1	39.7	20.6	NA	22.7	4096
NEV 01	2	4.5	14.6	4.0	38.7	19.8	NA	21.4	3741
NEV 01	3	11.1	26.4	-	47.2	21.4	NA	36.1	72
NEV 01	4	8.1	20.1	6.4	50.5	31.1	NA	37.6	283
NEV 02	1	6.9	18.5	4.2	45.2	25.7	NA	27.4	6095
NEV 02	2	4.8	15.9	4.0	41.6	23.3	NA	24.6	4868
NEV 02	3	17.7	34.0	3.3	64.5	36.6	NA	39.9	979
NEV 02	4	4.4	8.9	10.9	40.3	31.3	NA	32.4	248
N H 01	1	4.0	12.4	3.6	32.7	19.4	9.4	17.5	12096
N H 01	2	3.9	12.4	3.6	32.7	19.4	9.5	17.4	11934
N H 01	3	3.9	14.1	5.1	33.3	15.4	7.4	29.5	78
N H 01	4	6.0	13.1	4.8	27.4	22.9	2.7	19.3	84
N J 01	1	3.1	8.8	7.1	31.9	19.7	12.8	21.5	14954
N J 01	2	2.0	6.4	7.0	28.8	17.8	7.1	18.8	12971
N J 01	3	11.6	27.2	6.3	55.6	35.4	55.4	42.7	1741
N J 01	4	-	1.7	16.1	28.5	10.2	1.1	15.1	242
N J 02	1	5.9	13.5	6.2	37.6	24.7	23.2	24.6	25508
N J 02	2	2.4	7.4	6.8	30.2	19.2	8.4	17.0	17854
N J 02	3	14.6	28.7	4.8	55.9	38.3	58.8	46.6	7413
N J 02	4	-	1.7	7.1	26.1	5.6	2.6	14.9	241
N J 03	1	6.1	15.6	6.8	39.2	38.1	23.1	35.6	8002
N J 03	2	4.2	12.9	6.9	35.7	36.8	15.6	31.0	6234
N J 03	3	13.5	26.3	6.4	53.2	43.7	51.1	52.0	1678
N J 03	4	-	-	11.1	15.6	21.4	3.2	32.1	90
N J 04	1	4.1	11.1	5.5	33.3	17.5	13.3	22.8	24537
N J 04	2	2.7	8.4	5.7	29.8	14.4	7.2	19.8	21112
N J 04	3	13.7	30.5	3.8	57.0	39.4	55.2	42.7	3113
N J 04	4	0.6	1.3	13.1	32.4	9.7	2.6	23.4	312

Maternal risk measures by health service area (HSA) and race: United States, 1977-Con.

-----MATERNAL RISK MEASURES: 1977-----

HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
N J 05	1	6.6	16.4	4.4	38.5	24.1	19.2	32.5	21111
N J 05	2	4.5	13.2	4.4	34.1	20.5	10.6	28.6	16841
N J 05	3	15.6	30.4	3.9	57.2	38.9	55.2	47.8	4089
N J 05	4	2.2	5.5	12.2	32.6	23.4	7.8	36.9	181
N M 01	1	7.7	19.5	4.6	40.9	NA	NA	NA	23066
N M 01	2	7.2	18.9	4.3	38.7	NA	NA	NA	19314
N M 01	3	9.4	21.6	1.9	42.2	NA	NA	NA	593
N M 01	4	10.4	22.7	7.1	54.2	NA	NA	NA	3159
N Y 01	1	5.3	14.7	4.3	37.4	19.1	NA	17.2	22240
N Y 01	2	3.9	12.3	4.4	34.5	16.2	NA	16.2	19524
N Y 01	3	16.5	33.2	3.4	58.6	39.9	NA	33.4	2353
N Y 01	4	8.0	20.1	6.3	51.2	36.8	NA	30.1	363
N Y 02	1	4.9	13.0	3.9	34.9	20.0	NA	21.5	16497
N Y 02	2	3.7	11.0	3.8	31.7	16.8	NA	19.8	14433
N Y 02	3	15.1	29.7	3.9	60.5	44.8	NA	34.6	1871
N Y 02	4	1.6	4.2	9.3	31.1	20.7	NA	28.7	193
N Y 03	1	4.8	14.7	4.6	39.1	21.7	NA	20.9	20386
N Y 03	2	4.2	13.7	4.6	37.6	20.2	NA	20.4	18932
N Y 03	3	14.7	30.7	3.5	63.2	44.6	NA	27.7	1160
N Y 03	4	4.4	14.0	7.5	43.5	29.4	NA	29.0	294
N Y 05	1	4.6	13.7	4.4	36.7	21.0	NA	20.0	17647
N Y 05	2	4.2	13.1	4.4	35.7	20.0	NA	19.5	16714
N Y 05	3	13.1	28.5	4.2	58.3	42.3	NA	29.6	769
N Y 05	4	3.7	10.4	11.6	39.0	25.9	NA	26.7	164
N Y 06	1	3.1	8.8	6.8	35.0	16.9	NA	20.0	22956
N Y 06	2	2.2	6.8	7.0	32.4	14.8	NA	16.9	19576
N Y 06	3	9.3	22.9	5.5	53.1	31.8	NA	40.4	2921
N Y 06	4	1.3	3.5	10.2	30.5	12.4	NA	20.0	459
N Y 07	1	5.9	14.5	7.0	42.8	32.9	NA	47.4	106335
N Y 07	2	4.2	11.0	6.8	37.7	30.7	NA	39.9	64863
N Y 07	3	9.2	21.5	7.2	52.8	37.7	NA	61.2	38993
N Y 07	4	0.6	2.6	9.4	29.1	19.5	NA	38.2	3379
N Y 08	1	2.3	6.6	6.7	31.1	11.8	NA	15.1	30168
N Y 08	2	1.4	4.9	6.5	28.3	9.6	NA	12.5	27134
N Y 08	3	11.3	24.5	7.1	58.4	33.8	NA	40.5	2736
N Y 08	4	1.0	4.0	15.4	42.0	14.1	NA	21.0	298
N C 01	1	9.4	21.8	3.9	41.8	37.4	10.5	23.3	13150
N C 01	2	8.4	20.5	4.0	39.9	36.4	6.3	21.2	11658
N C 01	3	18.0	32.8	3.0	56.8	43.6	46.2	39.5	1319
N C 01	4	10.4	24.3	5.8	55.5	53.8	18.5	39.5	173

Maternal risk measures by health service area (HSA) and race: United States, 1977—Con.

-----MATERNAL RISK MEASURES: 1977-----

HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
N C 02	1	8.2	20.1	3.6	40.1	32.7	15.0	19.4	14119
N C 02	2	6.2	16.5	3.6	34.8	29.7	5.1	14.8	10528
N C 02	3	14.4	31.2	3.4	56.0	41.2	45.3	33.3	3488
N C 02	4	7.8	15.5	3.9	51.5	52.4	6.8	17.5	103
N C 03	1	9.4	20.7	3.3	40.5	33.8	17.2	28.5	13346
N C 03	2	6.1	15.5	3.4	33.6	30.1	4.8	18.6	9666
N C 03	3	18.6	35.0	2.8	58.9	43.8	51.0	54.8	3574
N C 03	4	4.7	11.3	6.6	46.2	34.0	6.6	34.9	106
N C 04	1	8.1	17.2	4.0	38.4	27.2	18.7	21.1	10625
N C 04	2	4.3	10.6	3.6	28.9	19.3	3.6	12.3	6582
N C 04	3	14.6	28.4	4.5	54.3	40.7	44.5	36.1	3931
N C 04	4	4.5	11.6	10.7	36.6	15.2	5.4	13.4	112
N C 05	1	9.4	23.2	3.5	46.0	34.5	18.6	27.6	15586
N C 05	2	6.1	18.0	3.2	36.1	27.9	5.3	19.4	8838
N C 05	3	14.8	31.5	3.8	60.5	40.6	41.2	40.3	5312
N C 05	4	9.5	24.5	4.5	52.8	52.9	17.2	30.9	1436
N C 06	1	10.0	24.3	3.7	45.8	35.1	19.9	34.6	17772
N C 06	2	6.0	18.5	3.3	35.4	27.0	3.7	24.7	10243
N C 06	3	15.8	32.9	4.1	60.8	46.2	43.1	48.2	7320
N C 06	4	2.9	7.7	5.3	34.5	42.1	2.4	44.2	209
N D 01	1	4.5	14.2	4.6	35.9	14.2	8.1	27.6	5284
N D 01	2	4.4	13.7	4.6	34.5	12.7	6.7	26.6	4938
N D 01	3	-	12.2	-	24.5	8.2	4.1	38.8	49
N D 01	4	6.7	23.6	5.4	60.9	40.4	32.3	42.1	297
OH 02	1	6.8	17.8	3.2	39.3	24.7	NA	20.2	16690
OH 02	2	6.1	16.3	3.2	37.1	23.7	NA	18.9	14247
OH 02	3	12.0	27.8	2.7	53.1	30.9	NA	28.6	2290
OH 02	4	2.0	7.2	5.9	36.0	27.2	NA	16.3	153
OH 03	1	6.3	16.2	3.7	39.8	22.4	NA	23.5	7006
OH 03	2	5.7	15.4	3.8	38.6	20.9	NA	22.6	6614
OH 03	3	17.7	32.6	2.5	63.0	49.3	NA	39.8	362
OH 03	4	-	6.7	3.3	33.3	33.3	NA	36.7	30
OH 04	1	7.0	17.9	3.7	40.9	23.7	NA	21.4	16251
OH 04	2	5.9	16.2	3.7	38.9	22.1	NA	20.1	14503
OH 04	3	16.1	33.5	3.2	58.6	37.0	NA	31.9	1652
OH 04	4	5.2	12.5	7.3	32.3	32.3	NA	22.3	96
OH 05	1	7.4	18.9	3.3	40.6	27.3	NA	22.8	24508
OH 05	2	6.7	17.8	3.3	38.8	26.3	NA	21.5	21394
OH 05	3	12.5	28.0	2.8	54.5	35.3	NA	32.1	2901
OH 05	4	3.8	9.9	7.0	37.1	26.9	NA	26.5	213

Maternal risk measures by health service area (HSA) and race: United States, 1977—Con.

-----MATERNAL RISK MEASURES: 1977-----									
HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
OH 06	1	7.5	20.3	3.8	41.7	27.3	NA	24.0	10807
OH 06	2	7.3	20.1	3.7	41.3	27.1	NA	23.7	10447
OH 06	3	12.0	28.7	4.1	56.2	34.7	NA	34.0	317
OH 06	4	-	2.3	11.6	32.6	16.3	NA	20.9	43
OH 07	1	5.5	15.2	4.3	39.2	27.4	NA	25.2	12930
OH 07	2	5.0	14.3	4.3	38.0	26.7	NA	24.3	12085
OH 07	3	13.2	29.0	4.4	57.6	38.3	NA	38.4	790
OH 07	4	3.6	7.3	1.8	32.7	25.9	NA	32.7	55
OH 08	1	5.3	15.3	3.6	37.9	21.2	NA	15.9	9091
OH 08	2	4.1	13.0	3.7	34.5	19.1	NA	14.0	7817
OH 08	3	12.8	30.6	2.9	60.2	34.6	NA	28.0	1223
OH 08	4	2.0	3.9	3.9	23.5	17.7	NA	13.7	51
OH 09	1	5.9	15.5	4.5	39.8	22.4	NA	19.1	30653
OH 09	2	3.8	11.7	4.7	35.1	19.3	NA	14.8	23610
OH 09	3	13.5	29.4	3.5	56.3	34.6	NA	34.6	6759
OH 09	4	1.8	5.3	9.2	30.6	17.7	NA	17.0	284
OH 10	1	5.4	15.4	4.1	38.2	22.9	NA	20.2	11021
OH 10	2	4.4	13.8	4.1	35.5	20.9	NA	17.6	9655
OH 10	3	12.9	27.3	4.5	58.4	37.4	NA	38.5	1300
OH 10	4	1.5	9.1	6.1	33.3	27.3	NA	23.4	66
OKL 01	1	8.4	21.4	2.9	41.5	28.5	12.1	31.3	45457
OKL 01	2	7.3	19.5	2.8	38.1	26.5	7.2	27.7	37042
OKL 01	3	15.0	33.4	3.2	60.1	32.0	47.8	47.9	4327
OKL 01	4	11.1	26.8	3.6	52.3	42.7	18.4	46.2	4088
ORG 01	1	4.6	13.1	3.6	35.6	17.4	13.9	24.7	16094
ORG 01	2	4.3	12.3	3.5	34.4	16.6	11.9	23.6	14833
ORG 01	3	11.9	28.1	3.3	56.3	27.5	53.8	40.0	764
ORG 01	4	3.6	11.7	7.7	39.0	25.3	11.5	33.5	497
ORG 02	1	5.2	14.9	3.2	37.3	22.0	11.6	23.6	16146
ORG 02	2	5.1	14.9	3.2	37.1	21.9	11.5	23.4	15612
ORG 02	3	5.5	18.4	0.9	35.8	17.6	25.7	31.1	109
ORG 02	4	6.8	16.5	4.5	43.1	27.0	14.6	29.2	425
ORG 03	1	5.6	16.6	3.0	39.8	24.7	9.8	30.3	5279
ORG 03	2	5.6	16.4	3.0	39.5	24.0	9.1	29.8	5032
ORG 03	3	8.7	43.5	-	47.8	35.3	34.8	43.5	23
ORG 03	4	4.5	18.8	3.1	47.8	39.6	24.0	40.5	224
PA 01	1	6.8	16.9	4.4	38.6	22.7	24.3	NA	49999
PA 01	2	3.8	11.1	4.9	31.6	17.2	8.4	NA	34825
PA 01	3	14.3	31.0	3.1	55.5	36.5	62.6	NA	14632
PA 01	4	1.9	5.2	6.3	29.9	16.3	4.8	NA	542

Maternal risk measures by health service area (HSA) and race: United States, 1977-Con.

-----MATERNAL RISK MEASURES: 1977-----

HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
PA 02	1	5.2	14.2	3.8	32.8	21.7	11.8	NA	11022
PA 02	2	4.8	13.6	3.9	32.0	21.0	9.7	NA	10540
PA 02	3	12.5	30.6	2.8	52.6	39.5	63.7	NA	432
PA 02	4	8.0	12.9	-	40.0	29.2	12.0	NA	50
PA 03	1	4.3	12.9	5.6	36.2	18.2	8.5	NA	9372
PA 03	2	4.4	12.8	5.6	36.0	18.0	8.0	NA	9222
PA 03	3	3.5	19.1	10.4	55.7	35.1	52.6	NA	115
PA 03	4	-	17.1	2.9	37.1	30.3	-	NA	35
PA 04	1	5.7	15.5	4.0	35.6	25.9	12.3	NA	18637
PA 04	2	4.9	14.3	4.1	34.1	24.9	8.9	NA	17456
PA 04	3	18.4	35.4	2.1	61.0	42.5	65.0	NA	1063
PA 04	4	3.4	11.9	7.6	40.7	30.7	22.2	NA	118
PA 05	1	7.1	18.6	4.3	37.7	23.4	8.7	NA	9173
PA 05	2	7.0	18.6	4.3	37.6	23.3	8.3	NA	9020
PA 05	3	16.3	25.6	4.7	53.5	38.1	53.5	NA	86
PA 05	4	9.0	11.9	9.0	38.8	18.0	11.9	NA	67
PA 06	1	4.8	13.4	4.7	32.8	17.1	11.6	NA	35201
PA 06	2	3.9	11.8	4.7	30.6	15.6	6.8	NA	31747
PA 06	3	13.7	29.2	4.5	54.6	31.5	58.0	NA	3268
PA 06	4	1.1	4.3	7.5	35.5	24.7	9.8	NA	186
PA 07	1	5.5	15.8	4.4	37.6	20.0	12.3	NA	11018
PA 07	2	5.1	15.2	4.5	36.7	18.8	10.0	NA	10463
PA 07	3	15.2	30.7	3.4	61.7	45.0	60.9	NA	475
PA 07	4	2.5	3.8	2.5	21.3	21.8	7.7	NA	80
PA 09	1	6.3	17.1	4.6	37.3	20.8	9.9	NA	7036
PA 09	2	6.1	16.8	4.6	36.9	20.6	8.8	NA	6888
PA 09	3	16.2	30.9	1.5	51.5	34.3	64.7	NA	136
PA 09	4	-	-	16.7	66.7	33.3	-	NA	12
R I 04	1	4.6	14.0	4.2	34.2	29.3	13.9	12.9	11624
R I 04	2	4.1	13.0	4.3	32.6	28.0	11.1	12.2	10749
R I 04	3	12.8	29.0	2.9	56.6	46.6	55.8	21.7	680
R I 04	4	4.6	15.4	6.7	44.6	44.5	16.6	23.9	195
S C 01	1	10.4	22.6	3.6	41.1	36.6	16.3	26.2	11891
S C 01	2	7.8	19.1	3.6	35.8	33.6	6.0	22.5	9127
S C 01	3	19.0	34.6	3.8	58.8	46.5	50.9	38.9	2735
S C 01	4	-	3.5	13.8	24.1	37.9	-	31.0	29
S C 02	1	8.4	20.2	3.5	41.6	32.4	20.5	28.6	12680
S C 02	2	5.4	14.6	3.5	32.9	25.7	5.2	19.0	7596
S C 02	3	13.1	28.8	3.5	54.9	42.6	44.2	43.2	4992
S C 02	4	1.1	9.8	8.7	39.1	27.5	4.4	35.2	92



Maternal risk measures by health service area (HSA) and race: United States, 1977-Con.

-----MATERNAL RISK MEASURES: 1977-----

HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
S C 03	1	10.6	23.4	3.8	48.5	39.4	25.6	34.1	11538
S C 03	2	6.8	18.1	3.0	35.4	31.4	5.8	21.9	5446
S C 03	3	14.2	29.4	4.5	60.5	46.5	43.8	45.2	6016
S C 03	4	1.3	11.8	4.0	40.8	55.4	6.6	36.0	76
S C 04	1	9.3	21.8	3.2	44.3	31.0	22.9	34.3	12174
S C 04	2	5.6	16.7	2.7	34.2	24.4	5.5	26.2	6436
S C 04	3	13.7	28.1	3.7	55.9	38.9	43.6	43.5	5567
S C 04	4	1.8	8.8	9.4	43.3	30.8	2.4	39.4	171
S D 01	1	5.6	15.1	4.6	39.3	18.5	12.3	33.1	12039
S D 01	2	4.7	13.4	4.5	34.9	13.8	7.2	29.7	10446
S D 01	3	-	6.6	6.6	52.5	13.1	-	32.8	61
S D 01	4	12.0	27.5	4.9	68.4	51.1	47.5	57.1	1532
TEN 02	1	8.7	20.2	4.3	37.2	38.1	10.7	28.3	11163
TEN 02	2	8.2	19.7	4.3	36.5	38.2	7.9	27.5	10443
TEN 02	3	17.3	30.4	2.6	49.1	38.4	55.2	41.8	652
TEN 02	4	1.5	4.4	10.3	23.5	21.2	2.9	22.1	68
TEN 04	1	8.7	21.7	3.4	37.4	33.8	13.2	27.4	22015
TEN 04	2	7.7	20.1	3.5	35.0	32.9	6.6	25.1	18523
TEN 04	3	14.8	31.5	3.2	51.4	38.6	50.8	39.7	3304
TEN 04	4	2.7	8.0	4.3	26.6	31.6	3.2	40.9	188
TEN 05	1	10.7	24.0	3.4	40.2	39.6	17.2	32.0	6509
TEN 05	2	8.1	20.3	3.0	33.6	35.7	5.0	26.0	4878
TEN 05	3	18.6	35.2	4.3	60.6	51.5	54.2	49.9	1615
TEN 05	4	6.3	12.5	6.3	18.8	53.3	-	60.0	16
TEN 06	1	10.6	22.4	3.8	41.3	30.2	30.4	26.7	14349
TEN 06	2	4.8	12.7	3.2	26.0	18.7	5.0	13.6	6984
TEN 06	3	16.3	31.9	4.3	56.2	41.2	55.1	38.5	7279
TEN 06	4	1.2	7.0	7.0	30.2	38.1	3.5	37.7	86
TEX 01	1	7.8	22.1	3.4	40.6	NA	NA	26.4	6420
TEX 01	2	7.4	21.0	3.4	39.1	NA	NA	25.2	6040
TEX 01	3	15.5	41.3	2.5	68.1	NA	NA	44.3	317
TEX 01	4	9.5	28.6	3.2	47.6	NA	NA	44.3	63
TEX 02	1	10.0	22.5	3.6	43.7	NA	NA	34.7	6676
TEX 02	2	8.8	20.9	3.4	41.8	NA	NA	33.2	6087
TEX 02	3	24.7	41.5	4.8	66.2	NA	NA	53.3	547
TEX 02	4	2.4	7.1	9.5	23.8	NA	NA	16.7	42
TEX 03	1	6.0	16.5	6.3	41.1	NA	NA	36.9	9636
TEX 03	2	5.9	16.4	6.4	41.3	NA	NA	37.5	9125
TEX 03	3	8.5	21.6	3.1	44.0	NA	NA	27.6	352
TEX 03	4	1.3	7.6	5.0	22.0	NA	NA	23.4	159

Maternal risk measures by health service area (HSA) and race: United States, 1977—Con.

-----MATERNAL RISK MEASURES: 1977-----

HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
TEX 04	1	9.2	22.4	3.1	40.1	NA	NA	28.0	9871
TEX 04	2	8.7	21.6	3.0	39.0	NA	NA	26.7	9183
TEX 04	3	17.5	36.1	3.4	58.8	NA	NA	46.1	595
TEX 04	4	1.1	10.8	4.3	35.5	NA	NA	36.3	93
TEX 05	1	9.0	20.6	3.3	38.6	NA	NA	26.4	46920
TEX 05	2	7.1	17.5	3.4	34.6	NA	NA	22.0	37486
TEX 05	3	17.4	34.3	2.9	56.0	NA	NA	44.6	8911
TEX 05	4	2.5	9.0	4.8	31.9	NA	NA	31.2	523
TEX 06	1	7.8	19.9	3.5	37.9	NA	NA	27.8	21222
TEX 06	2	6.5	17.8	3.4	34.7	NA	NA	24.7	17353
TEX 06	3	14.9	31.7	3.8	55.8	NA	NA	43.1	3488
TEX 06	4	1.1	5.5	4.7	20.0	NA	NA	29.2	381
TEX 07	1	10.2	23.7	3.7	42.6	NA	NA	28.6	11417
TEX 07	2	7.6	20.2	3.4	36.4	NA	NA	22.3	8502
TEX 07	3	17.9	34.4	4.4	61.0	NA	NA	47.4	2873
TEX 07	4	9.5	11.9	4.8	40.5	NA	NA	31.0	42
TEX 08	1	7.4	17.9	7.1	47.7	NA	NA	39.4	26554
TEX 08	2	7.2	17.6	7.2	47.6	NA	NA	39.5	25907
TEX 08	3	14.2	30.9	3.1	54.1	NA	NA	36.8	543
TEX 08	4	5.8	9.6	5.8	33.7	NA	NA	28.2	104
TEX 09	1	8.3	19.0	5.5	42.6	NA	NA	34.2	22708
TEX 09	2	8.0	18.6	5.6	42.4	NA	NA	33.9	21225
TEX 09	3	13.2	28.1	2.8	48.8	NA	NA	38.6	1262
TEX 09	4	3.2	6.8	7.7	27.2	NA	NA	35.6	221
TEX 10	1	9.5	21.9	3.8	42.1	NA	NA	27.6	9817
TEX 10	2	7.1	18.6	3.2	35.4	NA	NA	20.7	6942
TEX 10	3	15.9	30.7	4.7	58.4	NA	NA	44.4	2745
TEX 10	4	3.1	11.5	13.9	61.5	NA	NA	48.5	130
TEX 11	1	8.1	18.9	3.8	38.9	NA	NA	26.6	51740
TEX 11	2	6.4	16.2	3.8	35.2	NA	NA	22.7	39645
TEX 11	3	14.5	28.9	3.3	52.0	NA	NA	40.3	11550
TEX 11	4	1.3	3.3	8.1	29.7	NA	NA	23.2	545
TEX 12	1	9.1	21.7	3.6	43.0	NA	NA	34.2	6213
TEX 12	2	8.6	20.9	3.6	42.1	NA	NA	33.3	5840
TEX 12	3	19.5	37.5	2.7	57.8	NA	NA	49.3	339
TEX 12	4	2.9	14.7	17.7	44.1	NA	NA	36.4	34
01	1	4.0	11.4	5.7	46.7	13.6	3.6	16.2	37880
1	2	3.9	11.3	5.7	46.7	13.1	3.5	15.7	36648
	3	5.2	15.6	5.2	42.7	28.4	13.5	20.9	192
		5.5	14.0	6.4	46.5	28.1	8.6	35.7	1040

Maternal risk measures by health service area (HSA) and race: United States, 1977-Con.

-----MATERNAL RISK MEASURES: 1977-----

HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
VT 01	1	4.5	13.4	3.8	35.5	19.0	NA	23.4	7024
VT 01	2	4.5	13.5	3.7	35.5	19.1	NA	23.3	6977
VT 01	3	-	16.7	8.3	58.3	9.1	NA	63.6	12
VT 01	4	-	-	5.7	31.4	14.7	NA	24.2	35
VA 01	1	7.3	18.3	4.4	39.3	33.2	14.0	NA	9086
VA 01	2	6.2	16.5	4.5	36.8	30.5	8.4	NA	7691
VA 01	3	13.8	29.1	3.5	54.3	49.7	47.3	NA	1315
VA 01	4	2.5	10.0	5.0	31.3	23.8	1.3	NA	80
VA 02	1	3.4	9.6	6.4	33.7	13.5	10.3	NA	14346
VA 02	2	2.7	8.4	6.6	32.3	11.4	6.1	NA	12029
VA 02	3	9.2	20.3	3.0	44.2	27.4	41.1	NA	1701
VA 02	4	0.7	3.7	11.2	32.8	15.6	4.6	NA	616
VA 03	1	8.2	20.2	3.9	40.5	36.4	12.6	NA	15277
VA 03	2	7.2	18.5	3.9	38.0	35.1	7.1	NA	12956
VA 03	3	14.3	30.2	3.7	54.7	44.4	44.4	NA	2252
VA 03	4	4.4	8.7	4.4	36.2	33.3	2.9	NA	69
VA 04	1	7.4	17.7	4.0	40.1	31.1	21.7	NA	12970
VA 04	2	4.0	11.6	4.2	31.6	21.5	4.5	NA	7776
VA 04	3	12.7	27.5	3.7	53.3	45.7	48.6	NA	5055
VA 04	4	0.7	4.3	8.6	39.6	32.6	5.8	NA	139
VA 05	1	7.7	19.4	3.5	41.0	29.0	21.2	NA	21555
VA 05	2	4.4	14.5	3.2	33.6	21.8	6.6	NA	13692
VA 05	3	14.5	29.6	3.7	55.5	43.1	49.7	NA	7292
VA 05	4	2.3	6.1	10.0	34.2	23.0	4.7	NA	571
WAS 01	1	4.1	12.4	4.0	36.5	NA	10.7	21.8	33149
WAS 01	2	3.6	11.6	3.9	35.2	NA	8.9	19.9	28969
WAS 01	3	9.7	22.8	3.2	50.4	NA	37.8	37.8	1839
WAS 01	4	5.1	14.0	5.8	42.0	NA	12.9	33.0	2341
WAS 02	1	6.1	16.0	3.0	38.6	NA	10.5	23.1	8632
WAS 02	2	6.1	15.9	2.9	38.3	NA	10.2	22.6	8242
WAS 02	3	9.1	13.6	-	29.6	NA	18.2	34.1	44
WAS 02	4	5.2	20.2	5.2	46.5	NA	17.2	31.7	346
WAS 03	1	5.7	15.4	3.3	42.3	NA	11.2	30.9	7998
WAS 03	2	5.1	14.4	3.2	40.9	NA	9.5	29.4	7474
WAS 03	3	18.0	38.0	6.0	70.0	NA	52.0	50.0	103
WAS 03	4	13.0	26.7	4.3	59.2	NA	32.1	52.7	424
WAS 04	1	4.5	13.0	3.0	37.1	NA	10.5	17.0	7458
WAS 04	2	4.4	12.6	3.0	36.3	NA	9.7	16.3	6945
WAS 04	3	10.6	24.8	-	46.0	NA	47.8	20.4	113
WAS 04	4	5.3	17.3	3.3	48.0	NA	14.8	27.0	400

Maternal risk measures by health service area (HSA) and race: United States, 1977—Con.

-----MATERNAL RISK MEASURES: 1977-----

HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
W V 01	1	8.0	21.6	4.0	43.6	34.7	11.0	36.9	30111
W V 01	2	7.8	21.2	4.0	43.1	34.9	9.5	36.2	28868
W V 01	3	13.3	31.8	3.8	56.9	31.0	49.1	55.1	1137
W V 01	4	0.9	11.3	12.3	39.6	19.4	4.9	41.6	106
WIS 01	1	3.6	11.4	4.5	29.1	13.4	9.2	13.5	11642
WIS 01	2	3.7	11.5	4.5	29.0	13.3	8.8	13.2	11261
WIS 01	3	3.1	14.5	2.2	35.7	19.9	31.7	24.7	227
WIS 01	4	1.3	2.6	11.0	26.0	14.3	5.8	18.3	154
WIS 02	1	5.4	14.6	4.5	32.8	19.7	17.0	14.2	26094
WIS 02	2	3.6	11.6	4.7	28.5	15.3	9.8	11.4	22092
WIS 02	3	16.7	33.2	3.5	58.6	45.1	60.0	31.1	3652
WIS 02	4	5.1	13.1	5.7	39.1	29.6	19.4	21.0	350
WIS 03	1	3.3	11.1	4.9	29.9	12.9	6.7	13.9	6857
WIS 03	2	3.2	11.1	5.0	29.8	12.5	6.5	13.7	6755
WIS 03	3	-	-	-	20.0	20.0	-	10.0	10
WIS 03	4	6.5	15.2	-	39.1	37.4	20.7	34.8	92
WIS 04	1	3.2	12.1	4.4	30.5	13.3	7.5	15.3	7662
WIS 04	2	3.0	11.6	4.5	29.7	12.3	6.5	14.5	7408
WIS 04	3	-	5.9	-	35.3	17.7	11.8	23.5	17
WIS 04	4	9.3	29.5	2.5	54.9	43.4	38.7	42.8	237
WIS 05	1	4.1	13.3	4.5	32.4	14.3	8.4	22.0	8519
WIS 05	2	4.0	13.3	4.5	32.4	14.1	8.3	21.7	8409
WIS 05	3	-	5.9	-	11.8	17.7	11.8	29.4	17
WIS 05	4	6.5	12.9	6.5	38.7	33.3	18.3	47.8	93
WIS 06	1	4.8	14.1	4.7	32.9	14.8	8.3	20.6	5973
WIS 06	2	4.7	13.9	4.6	32.6	14.3	7.8	20.4	5859
WIS 06	3	-	-	-	12.5	-	-	-	8
WIS 06	4	12.3	21.7	6.6	46.2	43.4	36.8	34.0	106
WYO 01	1	5.2	16.6	3.6	41.6	21.1	7.3	23.5	8291
WYO 01	2	5.0	16.4	3.5	41.2	20.3	6.5	23.0	7908
WYO 01	3	8.0	16.0	-	34.7	26.7	24.0	33.3	75
WYO 01	4	8.8	22.7	5.2	53.9	41.7	22.3	34.0	308
INT 02	1	9.5	22.2	3.3	39.0	37.0	13.7	23.8	9259
INT 02	2	8.5	20.6	3.3	36.9	37.5	7.2	22.9	8005
INT 02	3	15.7	32.7	3.2	53.0	34.1	51.9	30.1	1222
INT 02	4	3.1	6.3	-	31.3	22.6	3.6	11.1	32
INT 03	1	9.8	22.6	3.5	44.4	37.3	12.5	36.4	10553
INT 03	2	5.5	16.4	3.4	35.1	29.4	4.1	25.7	6017
INT 03	3	15.9	31.6	3.4	57.7	48.3	30.5	50.9	4417
INT 03	4	0.8	4.2	6.7	21.9	30.3	-	34.2	119

Maternal risk measures by health service area (HSA) and race: United States, 1977—Con.

-----MATERNAL RISK MEASURES: 1977-----									
HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
INT 04	1	10.5	24.0	3.5	46.0	36.9	37.8	32.3	13355
INT 04	2	5.9	17.3	2.9	34.8	27.8	11.8	20.8	7097
INT 04	3	16.0	32.2	4.2	59.3	47.6	51.6	45.4	6106
INT 04	4	5.3	10.5	2.6	34.2	34.2	-	52.0	152
INT 05	1	4.7	13.7	3.7	34.6	15.3	8.4	17.1	39137
INT 05	2	4.5	13.4	3.7	34.1	14.8	7.5	16.8	38048
INT 05	3	12.8	27.4	1.8	55.6	32.0	49.8	28.9	729
INT 05	4	7.2	14.4	5.0	45.8	31.5	15.1	29.9	360
INT 06	1	5.3	14.5	3.8	36.3	17.2	13.7	23.4	11676
INT 06	2	4.5	12.9	3.9	33.8	15.1	9.5	21.5	10497
INT 06	3	13.9	31.2	3.3	60.8	35.6	57.7	40.9	1001
INT 06	4	2.3	12.4	5.6	44.9	36.0	16.9	39.2	178
INT 07	1	7.0	16.8	4.0	39.1	22.8	13.0	22.1	7236
INT 07	2	6.2	15.9	3.9	37.3	21.4	10.0	20.6	6717
INT 07	3	18.9	30.6	4.6	65.5	42.8	56.9	43.7	455
INT 07	4	4.7	12.5	9.4	39.1	32.3	9.4	27.0	64
INT 08	1	7.4	18.5	4.7	40.7	28.6	12.6	19.3	27332
INT 08	2	6.4	16.6	4.8	38.2	27.2	11.6	17.2	23561
INT 08	3	14.4	31.2	4.1	57.4	38.6	61.4	33.2	3624
INT 08	4	2.0	8.2	6.8	30.6	23.1	12.5	19.1	147
INT 09	1	4.8	15.0	3.6	37.7	16.7	10.6	30.7	5432
INT 09	2	3.7	13.3	3.6	34.3	11.9	6.8	28.6	4761
INT 09	3	-	15.2	-	32.6	15.2	15.2	43.5	46
INT 09	4	13.1	28.2	4.2	64.3	52.9	39.5	45.3	625
INT 10	1	4.7	15.0	3.3	34.6	15.3	10.6	27.4	6887
INT 10	2	4.4	14.5	3.2	33.9	14.3	9.8	26.6	6526
INT 10	3	3.9	15.4	11.5	38.5	3.9	7.7	41.7	26
INT 10	4	10.2	25.1	3.6	49.0	36.0	26.6	42.3	335
INT 11	1	3.5	12.7	3.9	33.9	11.4	6.0	24.5	6211
INT 11	2	3.2	12.3	4.0	33.4	10.6	5.5	24.1	6069
INT 11	3	-	-	-	13.3	13.3	13.3	23.1	15
INT 11	4	15.8	33.9	0.8	58.3	52.4	29.6	46.3	127
INT 12	1	6.8	17.4	3.7	38.3	21.8	17.1	20.5	21036
INT 12	2	5.3	14.7	3.7	34.2	19.0	8.4	18.3	16883
INT 12	3	13.3	29.7	3.3	56.3	34.0	55.6	29.3	3870
INT 12	4	2.1	7.4	9.2	39.2	26.3	7.1	30.7	283
INT 13	1	7.7	17.8	4.8	41.4	26.6	21.8	18.3	35993
INT 13	2	5.0	13.0	4.8	34.5	20.3	7.7	13.6	26633
INT 13	3	15.8	32.3	4.4	62.1	45.3	63.7	31.9	9081
INT 13	4	3.9	6.5	11.8	35.1	21.3	5.7	24.0	279

Maternal risk measures by health service area (HSA) and race: United States, 1977—Con.

-----MATERNAL RISK MEASURES: 1977-----

HSA	RACE	% UNDER 18 YEARS	% UNDER 20 YEARS	% 35 YRS AND OVER	% HIGH RISK	% LOW EDUCATION	% UN- MARRIED	% LATE PRENATAL CARE	BIRTHS
INT 14	1	5.8	16.1	4.2	39.1	22.0	11.6	18.7	6280
INT 14	2	5.8	16.2	4.2	39.2	21.9	11.4	18.4	6144
INT 14	3	8.5	15.9	-	39.0	28.8	75.0	28.4	82
INT 14	4	1.9	5.6	9.3	33.3	21.7	-	30.4	54
INT 15	1	8.9	21.5	4.6	38.5	38.9	8.6	31.6	6214
INT 15	2	8.8	21.3	4.6	38.4	39.0	7.9	31.4	6064
INT 15	3	14.8	26.7	1.5	43.7	34.3	43.0	37.1	135
INT 15	4	6.7	20.0	6.7	40.0	53.3	-	40.0	15

### SYMBOLS

Data not available ..... NA

Quantity zero .....

Quantity more than 0 but less than 0.05 .... 0.0

Statistical Notes for Health Planners is a cooperative activity of the National Center for Health Statistics and the Bureau of Health Planning, Health Resources Administration.

Information, questions, and contributions should be directed to Joel C. Kleinman, Division of Analysis, NCHS, 3700 East-West Highway, Hyattsville, Maryland 20782.